Railway Age

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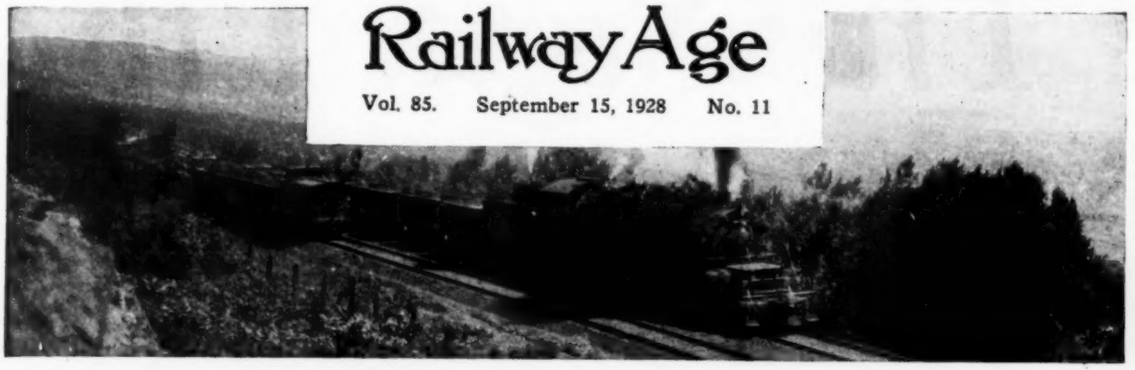

On the Duluth, Missabe & Northern near Duluth, Minn.

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The Signal that

"The Signal that Rides in the Cab" is in service operation on 17 railroads.

Railway Age

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Discussion of Rules

SAFE train operation depends largely upon the alertness of employees and their knowledge of the rules. The latter factor is of great importance. Mere knowledge of what the rules say and the ability to repeat one or more of them on demand is not sufficient. There must be also, an understanding of the application of the rules to specific cases. Any employee who regards the rules merely as something that must be memorized to avoid suspension or dismissal is a potential source of accidents. Fortunately, this type of employee is passing out of the railroad picture. The promotion of a better understanding of rules can best be accomplished by frequent rule discussions among the employees themselves and between employees and their superior officers. The brotherhood magazines have taken an important part in this regard by conducting departments where rules discussion is indulged in. Many of the railways have also encouraged this in various ways. One of the best methods of producing discussion of rules and interest in them is the rule-a-day plan in effect on the Missouri Pacific and described in the *Railway Age* of March 3, 1928, page 530. This plan has also been adopted by the Gulf, Mobile & Northern. By this means, the desired result of promoting rules discussion has been obtained on both of these railways, with a corresponding improvement in the safety of train operation.

Centralized Car Repairs

AN interesting suggestion in regard to freight car maintenance was made by Henry Miller, president of the Terminal Railroad Association at St. Louis, in addressing the Master Car Builders' and Supervisors' Association in that city this week as follows: "I have always thought that it might be well to consider having a common repair shop at large concentration points; by that I mean that large railroad centers like New York, Chicago, St. Louis, Pittsburgh, Buffalo, Cincinnati, and Kansas City, where large numbers of cars naturally accumulate, should have repair plants of common or community ownership sufficiently large to make all repairs, and, if necessary, a general overhauling of freight cars. Railroads may have ample capacity at their own shops to do their own work, but the problem of getting the cars to these shops is of great moment." Few railroads maintain large car repair shops at important railroad centers, such as those mentioned, and yet it is at these points that a substantial proportion of car damage occurs and damaged cars accumulate. In consequence, cars must be hauled empty long distances to regular railroad maintenance points, involving great expense in the aggregate and loss of equipment service. The establishment of large car repair shops of common ownership at big industrial centers would have the advantage of speeding up the repair of cars and their return to revenue-earning service. As Mr. Miller says, the latest bad order report shows that 6.7 per cent of the equipment is defective; if this figure could be kept below 4 per cent there would be available for use about 70,000 more cars, the earnings of which would go a long way toward paying the interest on the suggested plan.

Now the "Sleeper" Motor Coach

ALREADY a successful competitor of the railways for short haul passenger traffic, the motor coach, it appears, is soon to make a stronger bid for long haul business. In the past it has been restricted by its characteristics largely to daytime operation, but now the "sleeper" motor coach is an actuality. The first of four units of this type, called the "Nitecoach," has been completed by the Pickwick Stages, Inc., of Los Angeles, Cal. This coach has 13 compartments with sleeping accommodations for 26 passengers. Its design is such that, in spite of its large passenger capacity, it is said to conform with the California state regulations governing dimensions and weight. Each compartment provides semi-private seating accommodations for two persons during the day, the seats being convertible into an upper and a lower berth at night. The length of each berth is 6 ft. 4 in. Facilities are provided for the comfort of the passengers, and the coaches are manned by a driver, a chef and a steward. Information is not yet available as to the rates which will be charged for transportation and sleeping accommodations in these coaches. Presumably they will be considerably lower than railway rates for similar service. It will be interesting to see how successful these "Nitecoaches" will be in attracting long haul passenger traffic, business for which it has been considered motor coaches could never successfully compete with the railways.

Wanted—a Definition of Cost

ACCURATE and generally accepted definition of terms is an essential pre-requisite to any scientific discussion. Lacking such definition, disputants seldom carry a cause to victory. If *A* is generally accepted to have the value of *2* and *B* is accepted as *4*, then the sum of *A* plus *B* will equal *6*. If, however, each protagonist in a cause assigns his own private values to *A* and *B*, then their sum will likewise vary. It is precisely the lack of such accurate definition from which the discussion of cost accounting for railroads is suffering at the present time. If some patient individual should undertake to find and give to those who may be interested the one and only accurate and complete definition of cost accounting for transportation, he would be performing a service worthy of recognition and renown. The term as now used means many things to many people. Expense and cost are synonyms or antonyms, depending upon the viewpoint. There are

those who can explain that operating statistics make up a system of cost accounting, while others can advance convincingly the antithesis of that idea. Budgeting is or is not cost accounting, depending upon who says it. Some authorities assert that cost in transportation covers only a part of the operating expenses. Others hold that it covers operating expenses. Others would have operating expenses include taxes in determining cost. There are those who include operating expenses and a part of interest charges in cost. Others take cost in transportation as equivalent to operating expenses plus a full return on the capital investment. The foregoing suggests only some of the widely varying ideas of what is meant by cost in the transportation industry. If it be true that cost in this connection has no accepted meaning, can the advocacy of cost accounting for railroads result in anything more than an academic discussion, devoid of useful results, a Babel in which everyone continues to speak a language peculiar to himself?

Maine Railroads by Working Together Win Fight for Fairer Tax

THE railroads of the State of Maine have been paying a 5.5 per cent excise tax on gross earnings—manifestly a hardship,—particularly to those roads with little or no net earnings. The legislature passed, over the governor's veto, a law substituting for the tax on gross a "gross-net" tax, i.e., one which, while levied on gross earnings, would vary as to percentage with the net. The governor then appealed to a statewide referendum in an effort to retain the older tax. It became necessary, therefore, for the railroads to carry their case to the general electorate. How thoroughly they performed this task was set forth in an article which appeared in last week's *Railway Age;* and now the voice of the people (3 to 1 in favor of the "gross-net" tax, according to early returns, from the election) has expressed itself in further testimony to the justice of the railroads' position and the skill with which they presented their case. It is not, apparently, an impossible task to get justice from an American electorate—provided the interests involved can get together and make up their minds just what they want; and, having decided, will join together in unified action to show wherein their desires are reasonable, just and in accord with the general welfare. The railroads serving Maine are to be congratulated, not only because they have won this important contest before the bar of public opinion, but also because they were able to co-operate with each other in a way to present the most effective appeal.

A Single Classification Hump

THE freight classification yard which the Texas & Pacific completed recently near Fort Worth, Tex., and which is described elsewhere in this issue, is noteworthy by reason of the innovations which have been introduced. One of these is the concentration, over a single hump, of the classification of cars moving in both directions. While this procedure violates a long cherished principle of yard operation that cars must be kept moving in the direction of their line of travel, it is in keeping with the present thought of not a few students of yard operation who see in this expedient an opportunity to reduce the cost of operating terminals of small or moderate size.

The consideration of this measure has been given a decided impetus by the development of the car retarder, which has greatly reduced the cost of operating gravity or hump classification yards. Prior to the introduction of this device, gravity yards have proved economical only at points where a comparatively large number of cars are classified, as some roads have discovered to their sorrow. By reason of the marked economies effected in yard operation through the elimination of car riders, the car retarder has materially reduced the economical dividing line between the push-and-pull and gravity yards and is making gravity-yard operation economical at many points not previously feasible. There are still many points, however, where the number of cars moving in either direction is not sufficient to warrant a car retarder hump yard layout. At such points the question arises at once whether the economy effected by combining the traffic moving in the two directions over a single hump will be sufficient to more than offset the loss occasioned by the back haul of the cars in one direction. At Fort Worth the decision was in the affirmative. It is but reasonable to expect that the same conclusion may be reached at many other places.

The Value of Modern Motive Power

THE improvement in the operating ratio of the Erie for the first half of 1928 as compared with the first half of 1927, which resulted in a 29 per cent increase in net operating income for the first half of the current year, or one and three quarter million dollars more than for the corresponding period of 1927, is a striking example of the investment value of modern motive power. Last year the Erie placed in service 50 modern freight locomotives. These locomotives are of the type that develop high horsepower capacity which, in terms of train movement, means the handling of heavy train loads at relatively high speeds. The results pointed out in the article on page 415 of the September 1 issue are a 10 per cent increase in the average gross train load for the system, a 6.1 per cent increase in average train speed, and a 5.3 per cent decrease in fuel consumption per 1,000 gross ton-miles. When it is considered that the 50 locomotives operated on approximately 400 route miles of a system of over 2,400 route miles, and that their operating results were pooled with those of between three and four hundred other active locomotives in road freight service, a better conception of the striking performance of completely modern motive power may be visualized. This is further evidenced by the fact that the improved fuel efficiency of the new motive power was as great as 40 per cent on some divisions.

The gross investment in the 50 new locomotives—without taking account of possible credit adjustments for preceding retirements—may be placed at approximately five million dollars. This investment is considered the most important single factor in a program which has shown an immediate return in increased net railway operating income running at the rate of three and one half million dollars annually. While only part of the reduction in maintenance of equipment expense may be credited to the new power, almost a third of the total improvement in net railway operating income may be credited to the improvement in the transporta-

tion ratio alone, and for this the new power may take by far the major part of the credit without question.

Big results have always required bold measures. Improvements in operation, such as those obtained on the Erie, demonstrate the soundness of boldly attacking the improvement of motive power.

How Do the Railways Benefit?

SHOULD the railroads participate in increases in the general prosperity which they have helped to cause? Should they benefit from the improvements that they make in their service? Should they benefit by economies they effect in their operation? These questions are suggested by certain facts regarding conditions in business in general, and on the railroads in particular, which recently have been made public.

The letter of the National City Bank of New York for September regarding general business conditions presents a table comparing the net profits in numerous lines of business in the first one-half of this year and the first one-half of last year. There were both increases and decreases in net profits in manufacturing and merchandising, but there was an increase in total profits in these lines of 2½ per cent. The increase in the automobile and truck manufacturing industry was almost 23 per cent; in the automobile accessories industry, almost 36 per cent; in the electrical equipment industry, almost 22½ per cent, and so on. In the public utilities field the increase was 9.6 per cent.

On the other hand, the decline in the net operating income of the railways was 2.1 per cent. The decline in the railway equipment industry, which depends upon the railways for a market, was almost 29 per cent. Why should increases in profits in most lines of business be accompanied by a decline in profits in the railroad industry? It has been widely published in the press that the net operating income of the railways in July, 1928, was about $10,000,000 greater than in July, 1927, but we have seen no allusion to the fact that it was $21,000,000 less than in July, 1926, or that in the first seven months of 1928 the net operating income earned was over $55,000,000 less than in the first seven months of 1926.

Somewhat more than five years have elapsed since the chief executives of the railways met and adopted a program for rehabilitating railway properties and improving their service. The railways were then just beginning to emerge from a large and protracted car shortage. They have invested about $4,000,000,000 since then in improvements to make their facilities more adequate and to enable them to operate with greater economy. They sought and obtained through the Regional Shippers' Advisory Boards the co-operation of shippers in this endeavor. There has been no car shortage since. Railway service has been greatly improved. Large economies have been effected, total operating expenses in the first seven months of 1928 having been $280,000,000 less than in the first seven months of 1923. This large reduction in operating expenses has been secured in spite of substantial advances in the average wage per employee.

The benefits received by shippers and employees from the great achievement of the railways in improving their service and effecting economies in operation are obvious. But what benefits have the railways themselves received? In the first seven months of 1923, during the early part of which there was a car shortage, they earned at the annual rate of 4.83 per cent upon their investment in the properties. In the first seven months of 1928, when rendering almost perfect service, they earned at the annual rate of only 4.36 per cent. The percentage of return earned by them in the entire year 1927 was the smallest since 1922, and the return earned in the first seven months of 1928 was at a lower rate than in the corresponding part of 1927.

The railways are operated to serve the public. They are also operated to earn net returns, just as is any other industry. Shippers are paying lower average freight rates than they did five years ago. They are getting better service. Railway employees are being paid higher average wages. The railways themselves are getting no reward at all for what they have accomplished, for they are earning a smaller average return upon invested capital than they were five years ago. How long will the public and railway employees think it will be just or believe it will be possible for agriculture and industry to get improved railway service and railway employees to get advances in wages, while the return earned upon each dollar of capital, new and old, invested in the railroad business continues to decline.

The Presidential Candidates and the Railroad Problem

THE railroads rank among the country's greatest industries. The general prosperity depends largely upon the service they render, the employment they give, the purchases they make and the net return they earn. Of all our great industries the railroads can derive the least comfort from prevailing economic and political tendencies.

A security holders' committee, of which W. Emlen Roosevelt is chairman, and which represents a large investment in railroads, has addressed to the Republican and Democratic candidates for president a letter seeking expressions of their attitudes regarding proposed action to increase the net return of the railways in western trunk line territory. It is to be hoped that both candidates will answer, because any answers they make will indicate their general attitude toward railroad regulation. Both of them want to see the nation prosper. The railroads are such an important industry that no man can be assumed to understand what is essential to the general prosperity unless he wants to see the railroads prosper and definitely favors a public policy conducive to their prosperity. They should be as frank in giving their views on the railroad problem as on any other national problem.

The utterances directly or indirectly affecting railway matters that thus far have come from the presidential candidates have not been such as to encourage the belief that they understand the existing situation and tendencies in the field of transportation, or definitely favor policies for improving them. Neither Mr. Smith nor Mr. Hoover has as yet said anything to indicate he realizes that our great national economic problems include a railroad problem. The Transportation Act assured the railways opportunity to earn a fair return, which the Interstate Commerce Commission held would be 5¾ per cent. The railways as a whole have never been allowed to earn this, and have

earned thus far this year relatively less than since 1922. Those of the west have, in every year, fallen especially far short of a fair return. What is going to be the government's policy in future?

Views of the Candidates

Governor Smith said in his speech of acceptance: "Increased efficiency of railroad transportation and terminal handling means lowering of cost, which, in turn, reflects itself in the form of increased purchasing power through reduction in the cost of everyday necessities of life." He said nothing about what is necessary to maintain railroad efficiency. On the contrary, he proceeded to advocate "the construction and use of modern highways to carry the short haul and small bulk commodities and to aid in the effective marketing of farm products," and also the development of inland waterways, saying that, "commodities of great bulk, where the freight cost is a large part of the cost to the ultimate consumer, are among the least profitable for the railroads to carry and lend themselves more readily to water transportation." Already motor vehicles have taken from the railways a large part of their passenger business. Governor Smith's apparent assumption that they can in addition lose a large part of their "short haul and small bulk" freight to the highways, and a large part of their bulky freight to waterways, and still prosper and render the efficient service he says is needed indicates a very inadequate grasp of the nation's transportation problem. His advocacy of public ownership of water power also causes misgivings to those who cannot regard any socialistic policy with favor.

Mr. Hoover said in his speech of acceptance: "A large portion of the spread between what the farmer receives for his products and what the ultimate consumer pays is due to increased transportation charges." In his speech at West Branch, Iowa, he said, "We cannot return to pre-war railway rates without ruin to the railways." In both speeches he advocated extensive development of inland waterways to relieve agriculture and industry, especially in the midwest, of the increased burden of transportation charges. He added: "Nor does this development mean the crippling of our railways. The annual increase in railway traffic will give to them a far more than complete offset to these diversions. Moreover, everything that increases the prosperity of the country also helps the railways."

The views regarding transportation matters expressed by Mr. Hoover are entirely inconsistent with other views regarding economics and government policy expressed by him. As his other views are sound, it necessarily follows that his views regarding transportation matters are not. It is true freight rates on farm products have increased. It is also true that the prices of farm products have increased more in proportion than freight rates, that the rates always have been and are now small in proportion to the prices of farm products, and that, in consequence, there is hardly a farm product a pound, a bushel or a ton of which will not buy more miles of railroad transportation now than it would before the war. The operating costs of the railways have increased more in proportion than those of the farmers. The advance in freight rates has done no real injury to the farmer and no injustice to him unless it is to be assumed that increased costs on the farm justify higher prices but that increased costs on the railroad do not justify higher freight rates.

Mr. Hoover's view that extensive development of inland waterways will reduce the cost of transportation, stimulate agriculture and business, and increase general prosperity, is unacceptable to the student of transportation economics. If the costs incurred by the government be added to the rates paid by the shippers, the total cost of canal and river transportation long has been, is now, and probably always will be, greater than by rail in this and every other country. Therefore, while extensive development of inland waterways may reduce freight rates, it will increase taxes still more, and the result will be to increase, not reduce, the total burden of transportation costs that the nation will have to bear.

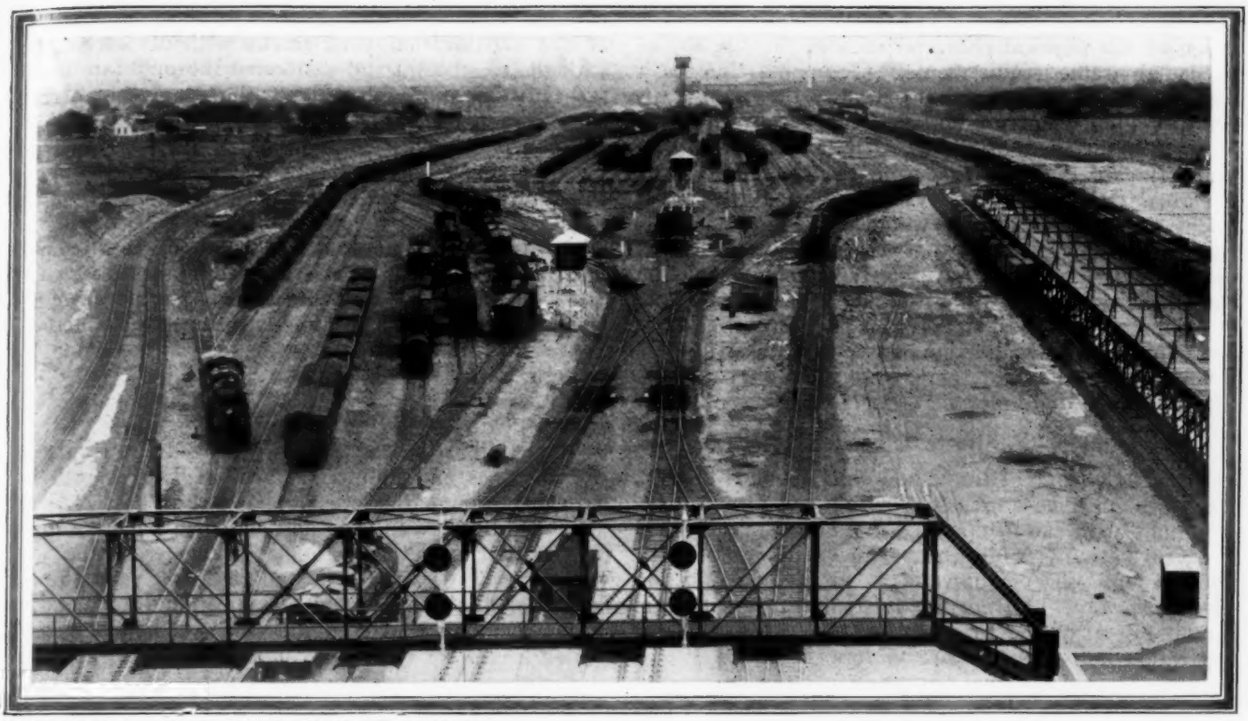
Diverting Traffic From the Railways

The theory that extensive development of inland waterways will reduce the total burden of transportation costs to be borne by the nation being unsound, it follows that that policy will not increase the general prosperity and therefore will not cause any increase in prosperity for the railways to participate in. Furthermore, there is no ground for the assumption made by both candidates that the diversion of traffic from the railways will not hurt them. Has not the diversion of passenger and freight business to the highways hurt them? Has not the diversion of freight to the Panama Canal hurt them? They now have 33 per cent less passenger business than eight years ago. Before the war their freight business increased an average of 5 to 10 per cent a year, but since 1920 it has increased an average of less than one per cent a year. Does anybody believe the railways are as well off today as they would be if so much of their passenger and freight business had not been diverted from them? The diversion of business from them in future must have the same effects it already has had—to make larger than it would otherwise be the cost of handling each unit of their traffic, and to curtail their net return.

The railroads are at present rendering good service. Their stocks, in a market that has lost all touch with realities, are selling at unusually high prices. These facts are obscuring the real tendencies in the industry. The net operating income now being earned is much less than a fair return, and is constantly being menaced by government-subsidized competition on highways and waterways by carriers whose rates are unregulated; by constant and successful pressure by employees for advances in wages; and by regulation of rates that disregards the legal rights and economic necessities of the industry. Some public men admit that railway rates cannot be reduced, but none of them favors reduction of the high labor costs which principally make necessary present rates.

The railroads are again the neglected stepchild of business and politics, as they were before the war. As long as they do their work well nobody outside the railroad business apparently cares whether they get a small reward, or any reward at all, for it.

It is plain that if present tendencies are not arrested they will result in crippling the railways. If they are to be arrested in time organized and powerful resistance must be offered to them. The leadership in resisting them must be taken by railway managers. Public men and men in other lines of business apparently will do all they can to break down the railroads until railway managers do what is necessary to make them realize that this is what they actually are trying to do.



Looking East Over the Classification Yard from the Hump

Texas & Pacific Terminal Embodies Noteworthy Innovations

New facilities at Fort Worth meet needs of growing traffic and make for operating economies

AMONG the most important units of the extensive improvement program which the Texas & Pacific has been prosecuting actively during the last two or three years are the freight classification yard, engine terminal and locomotive shops which comprise what is known as the Lancaster terminal at Fort Worth, Tex. While these facilities are illustrative of the effort which the management of this property has made to meet the needs of a traffic that has grown at the rate of about 6 per cent per year and to effect greater economies in operation, they merit particular attention because of the ingenuity and careful planning evinced in the design.

The engine terminal and yard were built because the efficient operation of the old facilities in the heart of Fort Worth had become impossible by reason of such physical obstacles as a lack of adequate room, inadequate size, insufficient length of tracks and the interference imposed by grade crossings with other railroads and with city streets. The new repair facilities on the other hand, represent the fulfillment of a long-felt need for a modern plant to supplement the existing shop at Marshall, Tex., which was built at a time when the requirements of modern locomotives could not be anticipated. While the present developments include only a locomotive shop and auxiliary facilities, together with an adequate yard with attendant facilities for heavy repairs to freight cars, ample space has been provided in the layout for a boiler and tank shop, as well as for a plant for the repair of steel freight cars. Ample provision has been made also for future enlargement of the engine terminal and the classification yard as needs require.

Select New Site

The site of the new facilities, at Tremble, Tex., about three miles west of the center of Fort Worth, was selected primarily with a view to the most suitable location for a classification yard that would fulfill the requirements of a freight traffic which now averages about 1,500 cars per day and would permit of adequate provision for growth. Fort Worth is an important point on the Texas & Pacific lines. It lies at the junction of the main line extending from El Paso, Tex., to Texarkana and to New Orleans, La., with the Denton branch through Denton and Sherman, to Texarkana. It is also the contact point with nine other railroads with which the Texas & Pacific handles an average of 14,000 cars per month in interchange, and by reason of its rapid commercial and industrial development, has become an important center of traffic origin and destination.

Tremble afforded the nearest location to Fort Worth on the main line where suitable grades could be obtained, not only throughout the length of the yard, but also between the east end of the yard and Fort Worth, at a reasonable outlay for grading.

The layout of the yard comprises an ingenious adap-

tation of the physical characteristics of the site to the particular traffic requirements. Occupying the north bank of the Clear fork of the Trinity river, the yard lies in rolling country embracing changes in elevation of 60 ft. in distances of 300 ft. It was therefore necessary to adapt the yard grades to the configuration of the area, rather than to develop the yard with level tracks except where grades would be of particular advantage. Study showed that a gravity classification yard to be operated in an easterly direction could be had very readily, and while it would have been feasible to build a second classification unit providing for movements in a westerly direction, the location was far less favorable for this, and there were also other reasons why two separated units were not desirable.

Advantages of Single Classification Yard

With the volume of traffic now to be handled through the yard or to be anticipated within the near future, one hump yard can be operated more economically than two; furthermore, while the yard as built imposes the necessity for reverse movements in the classification of all cars brought from the East, this reversal is essential for such cars as are brought into the yard for separation into cuts that are to return to Fort Worth for interchange or local setout. Another reason for favoring the construction of a single classification unit is that it was desired to install a car retarder plant, and with only one classification yard, this could be done more economically than with two.

The project also embraced the construction of a second track from Fort Worth to the terminal, including the revision of grades and alinement not only throughout the length of the yard but also for the distance of one mile eastward from its end, primarily for the purpose of reducing the eastbound grade out of the yard to 0.6 per cent. Throughout the length of the yard the two main tracks were separated so that the entire new terminal, three miles in length, lies between them.

The receiving yards for both eastbound and westbound movements, each track in which has a capacity of 100 cars, are located west of the hump. The classification yard, which lies east of the hump, has 24 tracks with an average capacity of 35 cars each, but 8 additional tracks are now being constructed and space is available for the addition of 4 more later. The advance yards lie on each side of and parallel with the classification yard, drill tracks being provided east of these yards of sufficient length to permit the pulling of the classification yard tracks without interference with the westbound and eastbound thoroughfare tracks respectively, and with only a short movement from classification to departure yards.

Car repair tracks for light repairs are provided adjacent to the hump, and cars may be humped directly to bad order reservoir tracks and doubled over into the light repair tracks alongside. Two tracks serving an icing platform are located just south of the hump in such a position that refrigerator cars can be advanced from the eastbound receiving yard to the platform for re-icing and then moved directly into the eastbound advance yard or back for movement over the hump for classification if this is necessary.

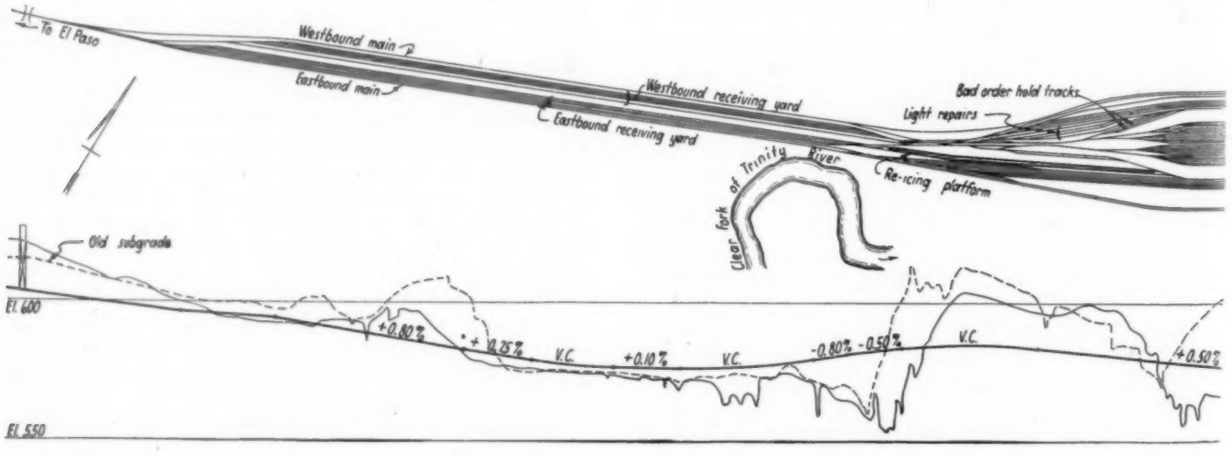
Method of Operation

Trains from the east and switching drags from connecting lines and industrial yards at Fort Worth are brought through the westbound pull-in track to the westbound receiving yard and classified over the hump for east or west destination. Trains from the west pull directly into the eastbound receiving yard and are classified in the eastbound classification tracks, except a few empties which go into the westbound classification tracks for return to connecting lines or for loading west of Fort Worth. The arrangement of the yards is such that classification, of the character of traffic moving, can be handled efficiently with practically no re-humping.

Owing to the favorable grades of the receiving yards, in the eastward direction, it has been possible to employ an eight-wheel switch engine for humping service. This engine, with an auxiliary booster on the front tender truck, has a total aggregate tractive effort of 69,500 lb., considerably less than that of engines commonly employed in hump yard service where grades approaching the humps are less favorable.

The adjoining east and westbound classification yards are connected just east of the hump by a scissors crossover which permits moving over either of the two hump tracks into either or both yards. If trains to be classified consist of cars which are all destined for the east or for the west, two trains can be handled at the same time, one over each hump track, but ordinarily one engine and one hump crew will handle all the business. On each of the two hump tracks, just below the summit, is a 250-ton Fairbanks plate fulcrum track scale, 75 ft. long, with a Streeter-Amet automatic recorder.

A new group ladder arrangement was developed at



Map and Profile of the West End of the Lancaster Terminal

the hump end of the classification yard which is particularly advantageous because it effects a quick separation of the cars on the diverging routes with a minimum of travel to clearance points and therefore permits of a closer spacing of cuts in operation. It also has the advantage of permitting a minimum footage of retarders while obtaining the required retardation. The ultimate layout in the classification yard will consist of six groups of six tracks, each controlled by 77 ft. of retarders ahead of each group.

Retarder Equipment

The yard is equipped with 17 retarders, 31 switch machines and 24 skate machines, while the ultimate yard of 36 tracks will have 21 retarders, 43 switch machines and 36 skate machines. The General Railway Signal Company's Type B electrically-operated retarder is used. Equalized shoe pressure, as obtained with this type of retarder, along with the toggle-lever arrangement of connections, gives greater retardation or braking power per rail foot than earlier designs, thus materially reducing the retarder footage required. The switch machines are of the high-speed type and the skate machines are of the newest design.

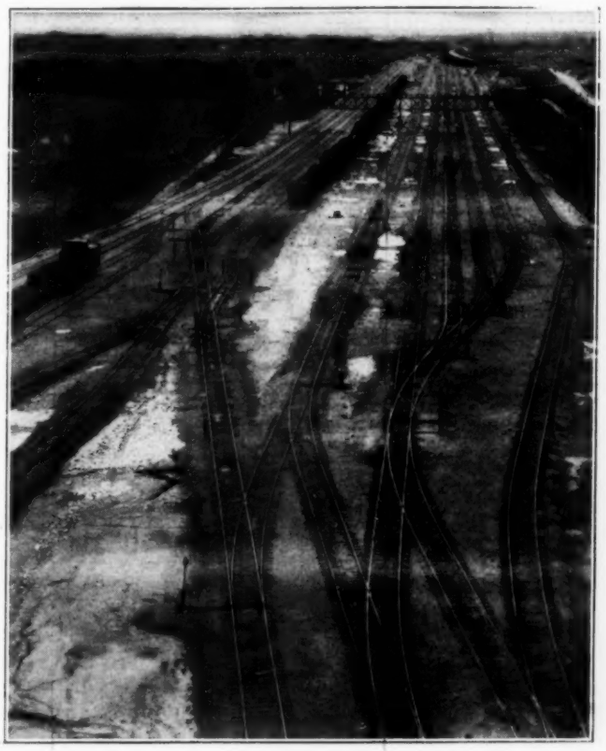
Two control towers have been provided. One is equipped with a machine for controlling the retarders and switches on the hump leads that route the cars to the east and westbound classification yards, and bad order hump tracks, respectively. The other has two machines, one of which controls the retarders, switches and skates for the eastbound yard and the other for the westbound yard. Three operators are required for each trick, one in Tower No. 1 and two in Tower No. 2.

The power for operating the retarders and switches at the receiving end of the classification yards is normally furnished by a 25-kw. over-compounded motor-generator set, operated from 440-volt, 60-cycle, 3-phase alternating current. A duplicate set was installed to insure continuous service, and in addition, provision has been made for a storage battery which is cut in on the line automatically if the a-c. supply fails. The battery is floated from either a one-kilowatt or a three-kilowatt motor-generator set, or from both in parallel, depending upon the rate of charge required.

Pneumatic Tube System

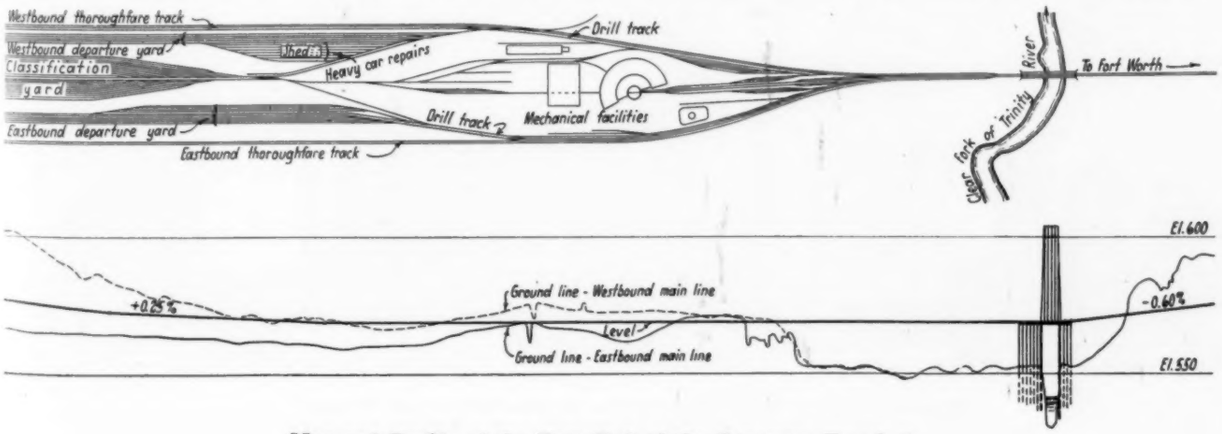
Lists showing the order of the cars in trains to be humped, the car numbers and destinations, and whether or not they are to be weighed, are delivered by the train conductor or engine foreman to the main yard office at the hump, where a yard clerk adds to them the number of the classification track to which each car is to be humped. They are then multigraphed on a ditto machine and forwarded to the hump-master's office and the towers by means of pneumatic tubes. Way bills weight tickets, car cards, car records and other reports are also handled through these tubes to and from a subyard office about 4,000 ft. east of the hump.

It has been found that the classification-track grouping provided, coupled with a proper co-ordination of grades and retarder locations and the use of high-speed switch and skate machines, has produced an efficient humping machine. Where advantageous, three-throw switches will be used in the ultimate layout to provide a quick separation of cars on the main leads. Yard operation at night is greatly facilitated by the use of forty 1,000-watt lamps in Pyle National projectors mounted on six steel floodlight towers of the American Bridge Company type. Four are 100 ft. and two are 80 ft. in height.



The Two Receiving Yards, Looking West from the Hump

Space for the mechanical facilities has been provided in a lenticular-shaped area, 4,000 ft. long by 700 ft. wide at its widest part, between the eastbound and



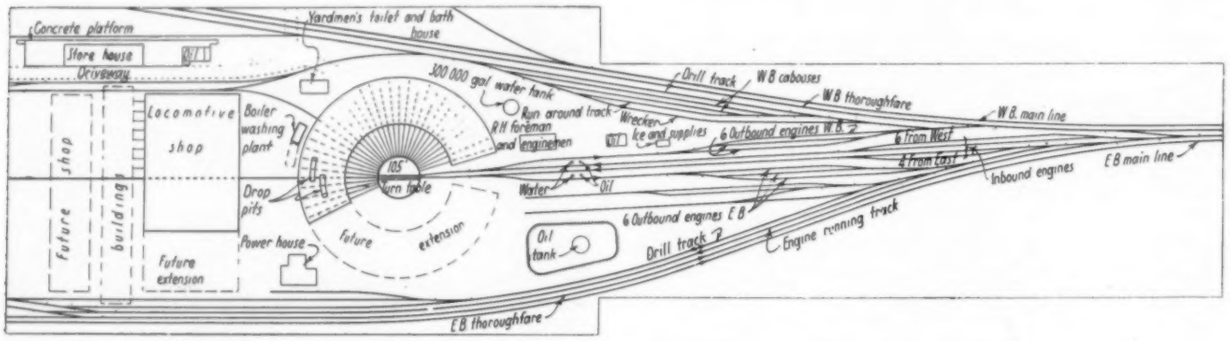
Map and Profile of the East End of the Lancaster Terminal

westbound main and running tracks. The engine terminal occupies the east end of this area with an approach leading from the throat of the yard. The locomotive shop lies immediately west of the roundhouse with a storehouse a short distance to the north. The space to the west of the shop has been reserved for future developments.

The approach to the roundhouse is simple, providing for two inbound and two outbound tracks with hold tracks for both inbound and outbound engines, and is arranged so as to provide direct connection with the tracks over which the engines enter and leave the terminal. Space has been provided for the future installation of a coaling station and cinder pits, but as the locomotives now served at this terminal are all oil-fired, these facilities have been omitted. Inspection pits are provided on the inbound engine tracks, as is also a D. & M. cleaner plant and equipment for washing the exterior of incoming locomotives. Oil and water are served to the engines by a column for each between both of the inbound and of the outbound tracks, the oil being delivered from two storage tanks with combined capacity of 861,000 gal. and the water from a 300,000 gal. tank. Sand is dried in an adjacent building, moved to overhead hoppers by compressed air and delivered to engines at this place.

The enginehouse as now built with 32 stalls 121 ft. long, is of frame construction of dense yellow pine except for the outer circle which comprises a reinforced concrete frame of columns and lintels for the wooden sash windows. The roof is essentially flat but is divided into two levels by a vertical offset of 8 ft. 7¾ in. occupied by louvers. The roof covering is of Johns-Manville asbestos built-up roofing, and transite smoke jacks of the same make have been installed. The floor is concrete. The climate being mild, no doors have been provided on the inner circle and no provision has been made for heating.

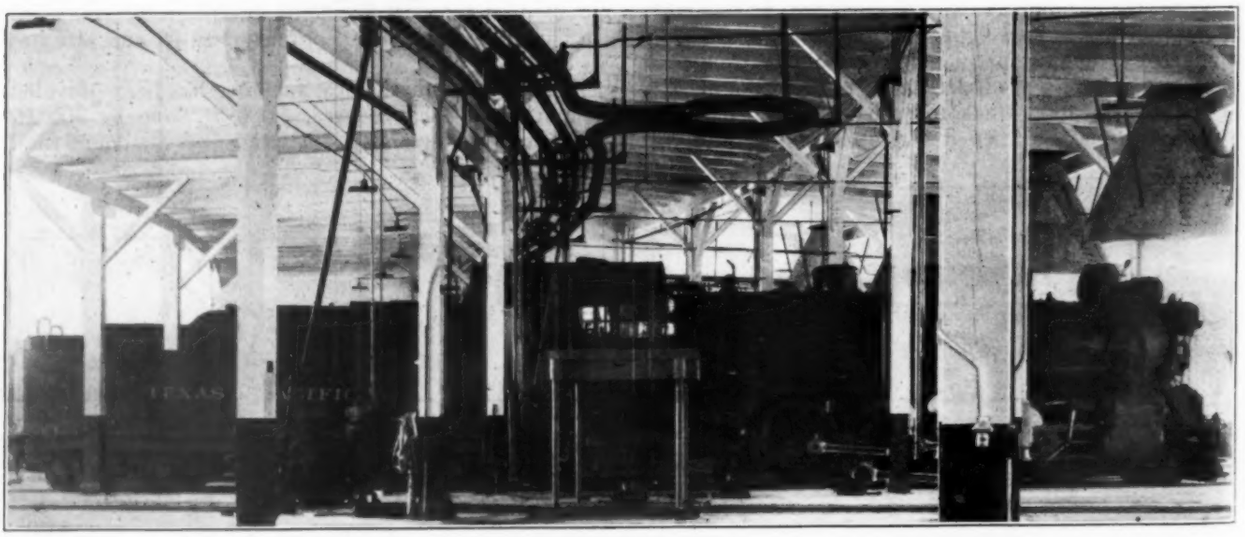
The engine pits follow usual practice, but special mention may be made of the use of creosoted oak blocks, 2 ft. long, embedded in the walls of the pits to serve as bearing and spiking timbers for the rails. Of a more distinctive nature are the wheel drop pits, of which there are two that serve a total of five stalls. The one located nearest the outer wall, where it can serve best as a truck pit, is 11 ft. 6½ in. wide and serves Tracks 26, 27 and 28. The other, 8 ft. 3½ in. wide, serves Tracks 28, 29 and 30. Track 28, which is common to both, is carried through a door at the rear of the stall and continued westward into the locomotive repair shop. Each pit is provided with an electrically-operated Whiting wheel hoist, with a detachable table to bridge each track served.



Plan of the Mechanical Facilities at the East End of the Yard

Direct Steaming Facilities

Because of the favorable results obtained at a smaller engine terminal completed some time ago at Gouldsboro (New Orleans), La., the new roundhouse at Lancaster yard has been equipped with the direct steaming system, which has been effective in obtaining an exceed-



Absence of Smoke is Responsible for an Unusually Clean Roundhouse

ingly rapid handling of locomotives at this terminal, considering the number of stalls in the roundhouse. About 70 engines are turned daily, of which nearly 40 are washed and refilled. The majority of these are of the Texas (2-10-4) type with a boiler capacity of 5,000 gal. of water.

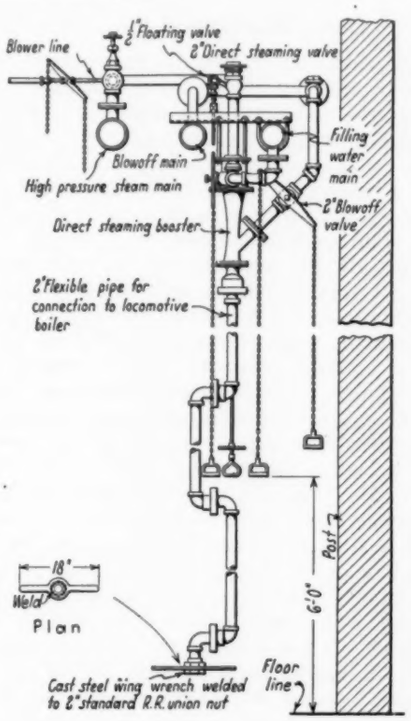
This rapid handling of large locomotives in a relatively small number of stalls is accomplished by filling the locomotives with a mixture of hot water and live steam until a proper water level is reached and then continuing the flow of live steam until a working steam pressure and corresponding water temperature is built up. With this system, it usually requires about 45 min. to fill and steam a Texas type locomotive to one gage of water and 150 lb. boiler pressure without a fire in the firebox. The locomotive can then be disconnected from the steam supply line and moved out of the enginehouse under its own steam before lighting the fire; as a consequence there have been no locomotives fired in the enginehouse since it was placed in service.

Piping Layout

The steam supply main throughout the roundhouse is six-inch., extra-heavy wrought pipe, welded, with a one-inch extension to the stack blower drop at each stall, which, however, is only used when boiler makers are required to work in a hot firebox. The steam main is mounted in a group with the blow-off, washing and hot-water mains, being supported by the same hangers with a single flexible drop at each stall, which can be attached to the locomotive blow-off cock and serves both for blowing-down and re-steaming locomotives.

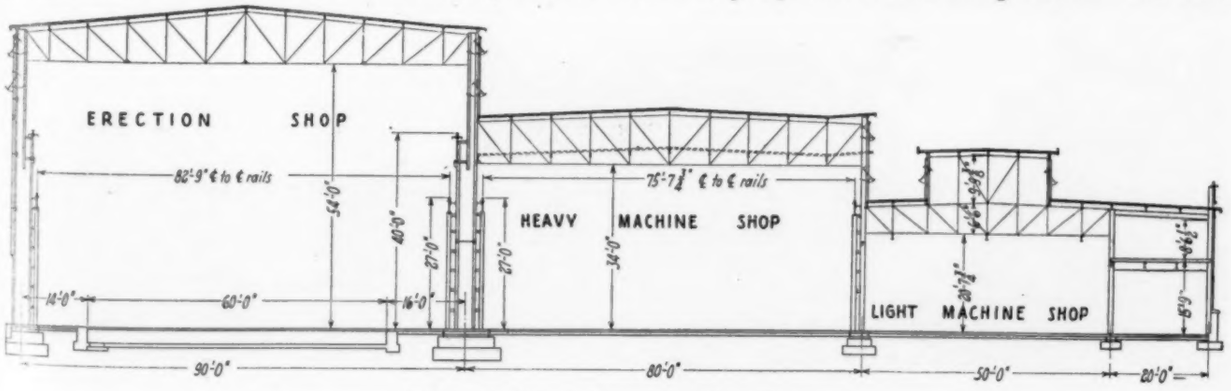
All valves for the operation of each steaming system are located overhead and are controlled by means of extension handles. The lateral branch to the blow-off line and connection to the hot filling-water main are equipped with Barco lubricated plug valves and extra-heavy swing checks. The stack blower extension lines are also equipped with this type of valve and all flexible joints in the hanging connection to locomotives were furnished by the Barco Manufacturing Company, Chicago. A special "direct steaming" valve, manufactured by the Crane Company, is provided for controlling the main steam supply to locomotives, together with a ½-in. floating line or by-pass around the main steam valve which is equipped with a Crane globe valve and extension handle, the purpose of this floating valve being to supply steam to locomotives being held in the enginehouse under pressure.

When locomotive boilers are being filled, the hot water and steam supply are combined overhead in a cast steel mixing chamber or "booster," constructed in the form of an injector. A "Y" lateral, cast integrally, connects with the blow-off main leading into a National hot water washout and fill-up system, from which a supply of hot filling water is available for locomotives and the stationary power plant boilers at temperatures ranging from 180 to 200 deg. F. All exhaust steam from the steam-driven air compressors in the power plant and other auxiliaries is also discharged into this system.



Pipe and Valve Layout for Blowoff and Direct Steaming at Each Stall

The hot water washout and fill-up system is located in a brick building adjacent to the roundhouse. This equipment includes a large steam and water separator from which the water blown off from locomotives drains by gravity to a washing water reservoir of 45,000-gal. capacity while the steam is drawn into tandem condensers of the jet type from which the condensate drains to a filling water tank of the same capacity. The plant is equipped with three single-stage Fairbanks-Morse centrifugal pumps, each driven by a Kerr steam turbine. One of the pumps is used regularly for supplying hot filling water to locomotives and the other to pump water for washing boilers. The third



Cross Section of the Locomotive Shop

pump is inter-connected, so that it can be used for either the washing or filling water supply.

The direct steaming system for locomotives above described was designed and licensed by the Railway Engineering Equipment Company, Chicago, and installed by the National Boiler Washing Company, Chicago, which also installed the hot water washout and fill-up system.

Other Mechanical Facilities

The turntable, 105 ft. long, is of the twin-span type, furnished by the Bethlehem Steel Company. To keep the tops of the radial rails on the same grade with the rails on the turntable, the ends of the radial tracks on the circle wall are supported on an 8-in. Bethlehem H-beam, weighing 58 lb. per ft., which is carried around the circle. This is fitted with a rail plate 8½ in. by 10 in. by ⅝ in. under each rail.

Just east of the roundhouse is a one-story brick building, 88½ ft. by 40 ft. in area, of which a length of 35½ ft. at one end is used as an office for the roundhouse foreman, road foreman of engines and engine dispatcher, and the other 43 ft. is occupied as an enginemen's lunch room, a locker room and a toilet and bathroom. A building of similar construction, 72 ft. by 32 ft. in area, located northwest of the roundhouse, provides separate lockers, bath and toilet rooms for the white, Mexican and negro roundhouse forces.

The power house is a building with a steel frame and brick walls, comprising a boiler room 69 ft. by 40 ft., a pump room 47 ft. 3 in. by 20 ft., and a compressor room 42 ft. by 35 ft. The boiler rooom is equipped with two 511-hp. water tube boilers, furnished by the Union Iron Works. These boilers carry a working pressure of 250 lb., this high pressure being required for direct steaming of locomotives. They are capable of developing 200 per cent rating with the natural gas fuel that is used. Space was provided in the boiler room for an additional boiler which will be installed within a short time. Breeching from the boilers connects with a reinforced concrete stack 175 ft. high.

The compressors and pumps are steam-driven. Electric power for all machinery, lighting, etc., is purchased from a local public utility, current at 11,000 volts being stepped down to 2,300 volts in a transformer located north of the terminal and then taken into the shop where it is reduced to 220 volts for use in motors operating the various pieces of equipment.

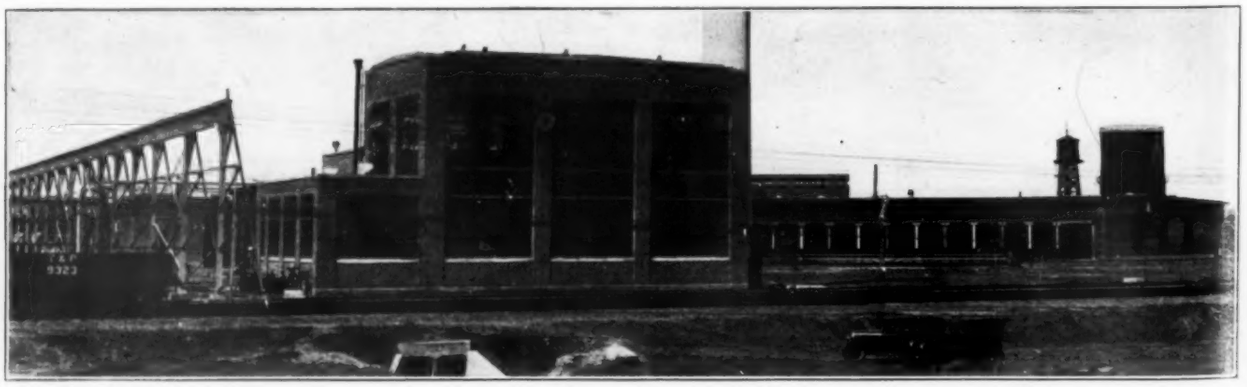
The Locomotive Shop

The locomotive shop consists, from west to east, of an erecting shop 90 ft. wide, a heavy machine shop 80 ft. wide, and a light machine shop in two bays of 50 ft. and 20 ft. respectively. As now built, this shop structure comprises 14 transverse panels of 24 ft. each, or a total overall length of 346 ft. 10 in., but space at the south end permits of a future addition of 6 panels. While the plan follows usual practice in providing large glass areas in the walls, the design is of particular interest by reason of the means used to provide adequate lighting in the interior bays, namely, the heavy machine shop and the 50-ft. bay of the light machine shop. To this end the roof of the former consists of a series of transverse monitors formed by placing the roof on top of the trusses for two consecutive panels and dropping it to a level eight feet lower for each third panel, while in the 50-ft. bay of the light machine shop a longitudinal monitor, 24 ft. wide by 10 ft. high, has been provided.

The erecting shop has a clear height of 54 ft. under the roof trusses and is provided with a bridge crane of 250-tons capacity on a runway 40 ft. above the floor. This crane is equipped with two trolleys, each of which has two hooks. One messenger crane of 15 tons capacity is operated on a runway 27 ft. above the floor. Nine transverse bays in the north end of the erecting shop are each provided with an engine pit 60 ft. long, the remaining bays being equipped temporarily with requisite machinery for their use as a boiler repair shop.

The heavy machine bay has a clear height of 34 ft. under the room trusses and is provided with a 15-ton bridge crane, the craneway having top of rail 27 ft. above the floor. The 50-ft. bay of the light machine shop has a clear height of 20 ft. 7¾ in. under the roof trusses, while the 20-ft. bay has a balcony for most of its length at an elevation of 16 ft. 3¼ in. above the ground floor, used for a general foreman's office and for toilet and locker rooms. The south end of the heavy machine bay is temporarily equipped as a blacksmith shop.

The walls of the building, from the top of a 5-ft. 8-in. concrete base to a metal cornice, are entirely of glass in Truscon steel sash, except for brick corner piers and pilasters. All track doors, including a door for each panel on the west side of the erecting shop, are Truscon steel railroad doors. The south end of the building is closed by a temporary wall of structural steel covered with sheet metal. The wooden roof sheathing is covered with Johns-Mansville built-up roofing and the floor is of creosoted blocks on a concrete base. A Swartout ventilator 48 in. in diameter is provided at the ridge of the erecting shop roof in every other panel.



View from the South, Showing the Power Plant, Enginehouse and Part of the Yard Crane Way

One feature of the steel framework worthy of special note is the provision of two adjacent roof trusses near the center of the erecting shop, which have been designed and detailed to support a girder three feet deep between them at midspan. Halfway between the trusses this girder is provided with a yoke that carries a becket which was used as the support for tackle employed to erect the 250-ton bridge crane and is available for use in connection with any repairs of the crane girders or trolleys. These trusses and the girder framed between them were designed to support a concentrated load of 75,000 lb. plus 25 per cent impact. The bridge crane was furnished by the Cleveland Crane and Engineering Works, the other cranes being furnished by the Pauling & Harnischfeger Corporation.

Columns in the east wall of the light machine shop continue above the roof to serve as part of an outside crane runway of 75 ft. 7¾-in. span which extends across the shop area for a length of 720 ft. at an elevation 31 ft. above the ground. This runway is equipped with a 15-ton bridge crane and the area covered by it is used for the storage of heavy castings, locomotive parts, etc.

A four-inch compressed-air line with one-inch branches to outlets on each column has been installed along each side of the erecting shop. Similar service is provided along both sides of the heavy-machine bay and along the east side of the light machine bay. A six-inch water line, with two-inch outlets leading to each pit, is provided along the east side of the erecting bay and a four-inch water line is also carried under the balcony of the light machine shop, while a separate one-inch line carried on the intermediate line of columns provides potable water for drinking fountains at convenient intervals. Steam is carried in a four-inch line along the west side of the heavy-machine bay with two-inch branches at each column. The shop is wired and piped throughout for both electric and oxy-acetylene welding operations.

Concrete Storehouse

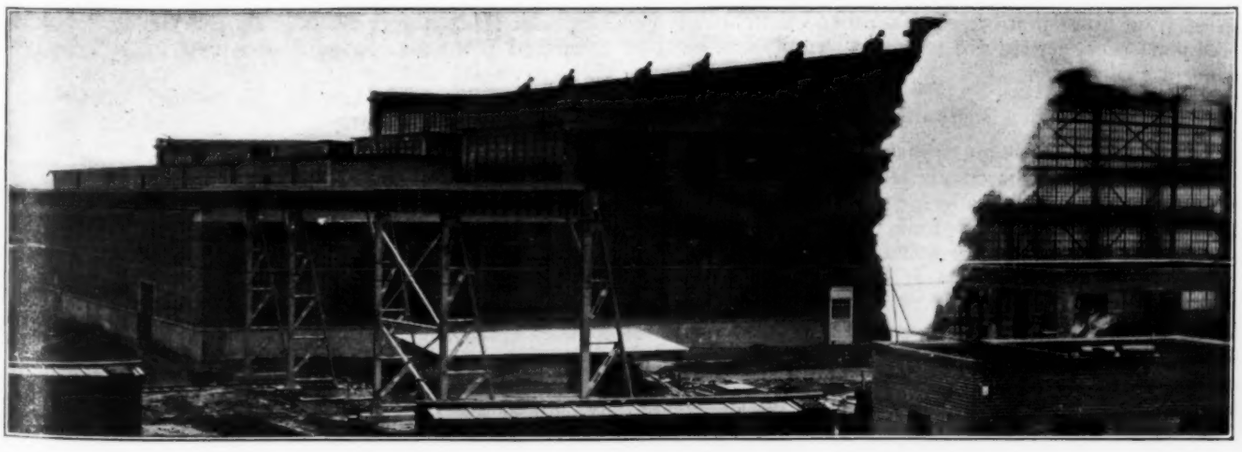
The stores department facilities include a storehouse 199 ft. by 55 ft. and an oil house 53 ft. by 35 ft., together with a concrete platform having a total length of 452 ft., all located north of the locomotive shop adjacent to a track leading out of the north drill track. The storehouse is of reinforced concrete flat-slab construction with brick curtain walls. It is designed to be a two-story building eventually, but at present only the east half has a second story, the second floor and two panels of the first floor being used for offices, files and assembly rooms. The first floor of this building, as well as the concrete platform, is at car floor level and is supported on earth fill retained by concrete walls along both sides of the platform.

The Oil House

The oil house is of the same character of construction as the storehouse and has one floor at platform level and a basement that is partly under the platform so as to afford a floor area 50 per cent greater than that of the first floor. Access to the basement from the ground level is provided by a ramp, but an elevator has also been installed which is of the Craig-Ridgeway steam hydraulic type to reduce fire hazard. A second oil house of similar design and construction has been provided east of the enginehouse to serve as an engine terminal facility.

The preparation of the site of the new yard, and the second-track work and line and grade revision east of it required the moving of 1,111,000 cu. yd. of material from excavation to embankment, all of which was earth with the exception of 165,000 cu. yd. of rock. Among the noteworthy features of this phase of the project are the variety of excavating and hauling equipment used and the fact that 400,000 cu. yd. of grading was handled in motor trucks, 23 White trucks of 4 to 5 cu. yd. capacity being employed in this work. For the long haul from the large cut in the vicinity of the hump to the fill at the crossing of the Trinity river, standard-gage 20-yd. steel Western dump cars were employed. For the grading in the vicinity of the buildings, primarily to level up the surface, excavating graders and wagons were used. All of the receiving yard fill was made with material hauled in trucks while the filling between the hump and the shop buildings was divided equally between trucks and narrow-gage cars hauled by Plymouth gasoline locomotives. Seven different units of power excavating equipment were employed.

The improvements at Lancaster yard were designed and carried out under the direction of E. F. Mitchell, chief engineer and his staff; F. R. Naylor, assistant engineer, was in direct responsible charge of construction. The buildings of the terminal were designed and built by the Austin Company, Cleveland, Ohio. All grading was done under contract by the D. A. Foley Construction Company of Los Angeles, Cal. All tracks, comprising about 60 miles, were laid and ballasted by company forces.



The North End of the Terminal Shop

G. M. & N. Improves Safety 80 Per Cent

DURING the first quarter of 1928, 1,659,000 man hours were worked on the Gulf, Mobile & Northern, with 10 casualties. This is at the rate of 6.03 casualties per million man hours and represents an improvement of 80.5 per cent in five years. In this respect, this railway led the entire Southern region for the period mentioned. The consistent improvement is indicated by the following:

Year	Casualty Rate Per Million Man Hours
1923	30.89
1924	21.31
1925	19.42
1926	12.18
1927	12.02

From May 19 to August 8, there were no reportable personal injuries to employees on duty, with every prospect for continuing the record. As a result, the casualty rate has been still further reduced, having been 3.9 from January 1 to August 1.

Reportable train accidents amounted to 64 in 1923; 46 in 1924; 26 in 1925; 17 in 1926; and 29 in 1927, a reduction of 54.7 per cent. The mileage operated during 1927, was 46 per cent greater than during the year 1923, and 29 per cent greater than during the year 1926.

Organization

These results have been accomplished without any regularly constituted officer making safety his sole duty. The organization for safety is as follows:

Vice-President and general manager
Department heads
Supervisory officers
General chairman
Assistant general chairmen
Committee chairmen

Unsafe practices or conditions are reported immediately by each employee to his committee chairman. Every employee is a safety committeeman and contact is made through frequent safety meetings, which are presided over by the committee chairman or other safety chairmen.

The committee chairmen are responsible, of course, for the safety records of employees within their committees. The record of each committee is prepared in the office of the vice-president and general manager after the final personal injury reports have been received through the heads of departments. These records are consolidated and summarized and distributed monthly to each of the other safety chairmen. In addition, frequent safety letters are sent to all employees by the general chairman.

Equitable Basis of Comparison

In order to provide an equitable basis of comparison for the ranking of the committee chairmen, all injuries are taken into consideration, and the time lost from duty is used as a measure of efficiency. For each hour, or fraction thereof of time lost from duty, one point is charged against the record. If an employee is permanently or fatally injured, 200 points are charged, which is the maximum number for any injury. However, if the injury is not such as to make it necessary to go to a company physician, but requires simply minor first aid treatment, nothing is charged against the committee chairman's record. The man hours worked in each committee chairman's organization are reported daily to the department heads, and the point rating is based upon the number of 10,000 man-hours worked.

The Campaigns

Safety campaigns have been conducted periodically on the G. M. & N. for some years. Some of the features of these campaigns were described in the *Railway Age* of October 22, 1927, page 780. A safety periodical, entitled "The Hot-Box," has been issued for several years, containing records made in general, but with particular reference to laudable individual performances.

These periodical campaigns are now being supplemented by an intensive all-year campaign, which was begun on June 1, 1928. The employees were informed of this campaign by means of bulletins and circulars and the executive officers made a special trip over the entire railway, talking to all employees in the interests of the campaign.

Results

The results are already apparent. There were no reportable injuries in June, and only 12 minor injuries. The transportation, stores and special agent's departments had perfect records, with 138,621, 9,589 and 2,040 man hours respectively. Nineteen of the 23 mechanical department committees had perfect records. The total man hours worked in this department were 130,608, and there were 8 injuries, resulting in the loss of 14 hr., or 1.08 hr. lost to each 10,000 man hours worked. Four of the six maintenance of way committees had perfect records. A total of 195,897 man hours were worked in this department, with 4 injuries, and 33 hr. lost time, or 1.68 hr. lost per 10,000 man hours worked. The grand total for all departments for the month was 12 injuries (none reportable), 47 hr. lost, 476,155 man hours worked, or an average of 0.99 hr. lost per 10,000 man hours worked.

July also was a perfect month, so far as reportable personal injuries were concerned. Total injuries in this month amounted to 23, the hours lost were 116. Since 459,396 man hours were worked during this month, the hours lost per 10,000 man hours worked were 2.52. The combined record for June and July shows 36 injuries, 162 hr. lost, 935,551 hr. worked, or 1.73 hr. lost per 10,000 man hours worked.

Birthday Letters

This campaign has been aided materially by the support of the employees. The development of this spirit has been made a special study by the G. M. & N., as described in the *Railway Age* of August 13, 1927, page 291.

One interesting feature is the practice of sending birthday letters from the assistant general manager to all employees under his jurisdiction. These letters are all individually written, but the general tenor is somewhat similar. The following letter to an engineer is typical.

Congratulations! You are 38 years of age today, aren't you? You have been playing the game of railroading a good while. Keep on giving the best you've got; it always pays. I hope you are celebrating your birthday by doing all you can to promote safety. We just wanted to greet you on this, your birthday, and to say that we hope you will always be careful and play safe, so you will enjoy many more happy birthdays.

The "Rheingold" Train on the German State Railways

Special train service inaugurated last May between Holland and Switzerland attracts tourists

Left—Toilet, First-Class; Center and Right—Combined Chair and Dining Cars, First-Class

ON May 15, 1928, the German State Railways placed in service a new extra-fare train, known as the Rheingold, which runs between the Hook of Holland and Basel, Switzerland. All the cars for this train were planned by the German Government Department of Railroads to make as uniform a unit as possible. Each car has an overall length of 77 ft., is of all-steel construction, and completely equipped with SKF anti-friction journal bearings. The order for the equipment used by the "Rheingold" was divided among five German builders.

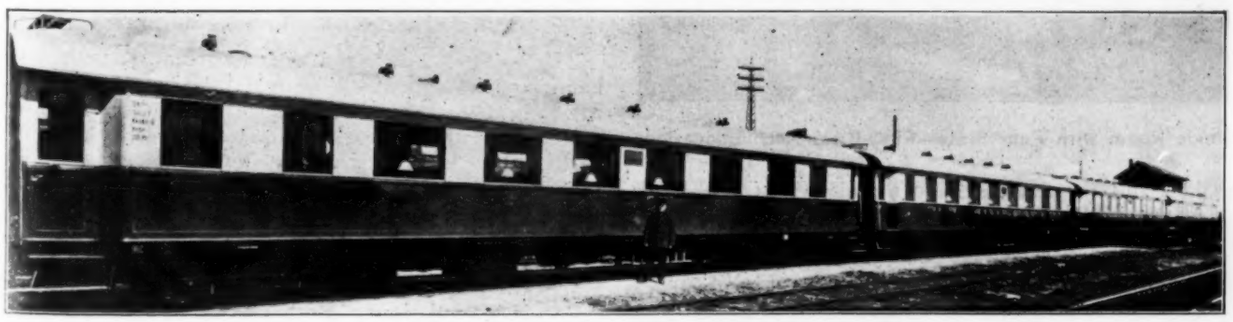
The cars used on the Rheingold are owned by the German Government Department of Railroads, but are operated by the Mitropa, the German sleeping car company. The train is composed of four different kinds of cars; namely, first-class cars having seats for 28 passengers; first-class cars equipped with a kitchen and seating 20 passengers; second-class cars with 43 seats, and second-class cars equipped with a kitchen and seating 29 people. Each train is made up so that there is a kitchen for every two cars. In addition, the Rheingold train includes a baggage car.

The route taken by the Rheingold is shown on the map. All-year service is provided between the Hook and Amsterdam, and Basel. From July 1 to September 10 the Rheingold is run through to Lucerne, while during the remaining months the train is operated as far as Basel only. Good train connections, however, are provided from Basel to Lucerne during the off-season period. Connecting train and boat service have been arranged for passengers from London via Harwich.

Passport and customs formalities are taken care of on the train itself. This arrangement eliminates the necessity of passengers having to leave the train to pass their baggage through customs. At the Dutch-German border the passport and customs formalities are handled while the train is running between Zevenaar and Duisberg. On the Swiss border they are taken care of between Basel union station and Basel.

London to Lucerne in 24 Hours

It is possible to make the trip from London, England, to Lucerne, Switzerland, in 24 hours. From the Hook of Holland, the Rheingold makes the trip to Basel in about 11 hours, and Lucerne in about 12½ hours. From Amsterdam, the duration of the trip to Basel is about 11 hours, with the addition of approximately another hour from Basel to Lucerne. This train also



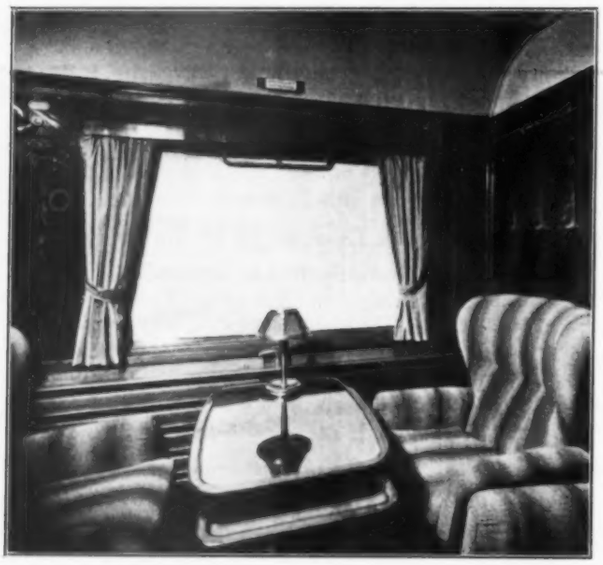
First and Second Class Coaches Used on the "Rheingold"

includes in its itinerary the well-known resort, Baden-Baden, west, and also the Black Forest. The trip from the Hook of Holland to Baden-Baden, west, is made in about nine hours. From the Hook to Freiburg, the station from which trips are made to the Black Forest, requires about 10½ hours. Good train connections are also provided for passengers going to Weisbaden,

Interior of One of the First-Class Combined Chair and Dining Cars

Frankfort on Rhine, via Mainz, to Stuttgart and Munich via Karlsruhe, or to Geneva and Zurich, via Basel.

A total of 437½ miles of the 542-mile run of the Rheingold is made through German territory. The locomotives used to haul the trains are changed at Mannheim only. They have a maximum speed of 62½



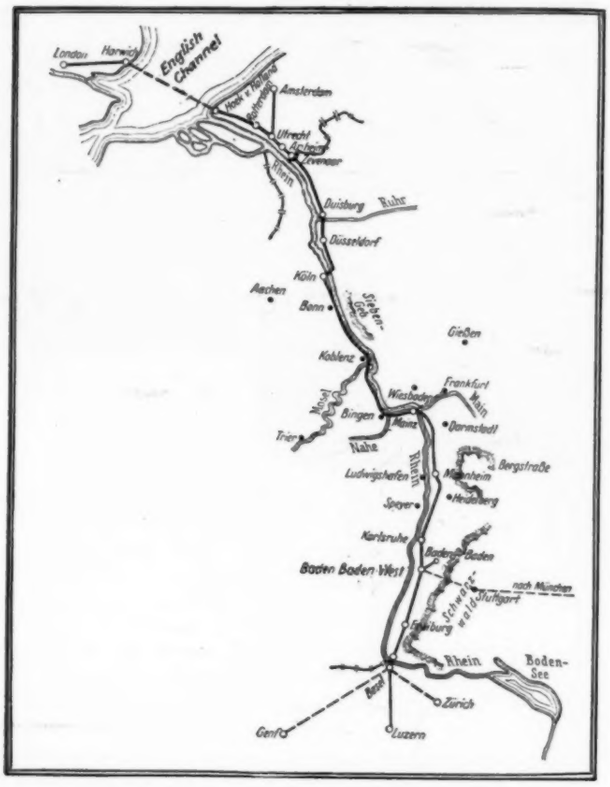
Single Room with Four Seats—First-Class Accommodations

m.p.h., and the tenders have a capacity of 7,140 gal. of water and 8½ tons of coal.

The First-Class Train Equipment

It will be noted from the illustrations that there are several different styles of interior furnishings and decorations in the first-class equipment. The floor plans of both first and second-class cars are laid out differently. A different color scheme wall finish, design of upholstery, draperies, tables and chairs have been used in each car. The interior treatment of all of the cars was planned by prominent German artists and interior decorators.

Large lounging rooms or chair compartments as well as compartments with four and two seats for smokers and non-smokers have been incorporated in the floor plan of the first-class cars. Single upholstered seats are provided for the passengers of this class. These



The Route of the "Rheingold"

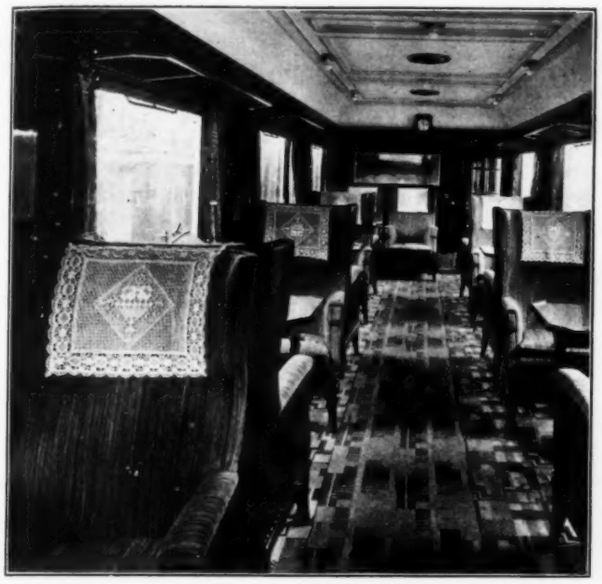
seats are built with high backs. The seats in the lounging rooms are placed along both sides of the car as is generally found in American chair cars, with a table between as shown in the illustrations. Wide windows insure a good view from any one of the seats. Tables of special design are placed in the smoking and non-smoking compartment around which the seats are grouped. A lower shelf provides a convenient place for laying articles such as books or magazines, so that the top can be made clear for card playing, etc.

The Second-Class Train Equipment

The second-class cars are constructed with two lounging rooms in which the seats are rigidly mounted. These seats are of double construction as shown in one of the illustrations, comfortably upholstered and built with a high back. They are arranged so as to provide a group of seats with a table between on one side of the car, and two single seats with a table between on the opposite side.

From the standpoint of comfort facilities, there is practically little difference between the first and second-class accommodations. Both classes of cars are provided with toilets and washrooms, the design and arrangement of which have been made according to the

latest sanitary requirements. Hot and cold water, towels and soap are provided for the use of the passengers. Each car is provided with an individual check room in which hand bags, wraps and personal effects such as canes and umbrellas may be checked. In addition, each passenger has a baggage rack at his disposal. Provision has been made in the design of the seats in the



A Variety of Interior Furnishings and Decorations Are Used—A First-Class Combined Chair and Dining Car

second-class cars for room underneath for the storage of small articles.

The kitchens and serving rooms in both classes of cars have been laid out and equipped alike. Food and

Interior of a Second-Class Combined Chair and Dining Car

drinks are served to the passengers at their seats so that the walk through one or more cars to a dining car is eliminated. Each car is equipped to meet the requirements for international traffic through Holland, Germany and Switzerland. They are equipped for both steam and electric heating, provision being made for operation by either direct or alternating current. The switches for lighting and heating circuits are mounted in a special cabinet which is located in the check room. The effect of the interior lighting is enhanced by single table lamps which are placed on each table. Ample ventilation is provided by roof ventilators. In addition, each lounging room is also equipped with roof fans.

The exterior appearance of the cars is different from other passenger cars used on the German State Railways. This has been accomplished by the use of special colors for the cars used in the Rheingold train. The upper and lower parts of the cars are finished in violet and the wall surface between the windows is painted in cream. Gold stripes extend the entire length of the car. The baggage car is also finished in violet in order to keep the same color scheme throughout the train.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading during the week ended September 1 amounted to 1,116,948 cars, an increase of 36,108 cars over the preceding week but a decrease of 412 and 26,500 cars respectively as compared with loading in the corresponding weeks of 1927 and 1926. Loading of ore and miscellaneous freight only showed an increase as compared with the totals a year ago. Coal loading, which amounted to 178,093 cars, was 12,546 cars lower than in the corresponding week of last year. Loading in the Eastern, Allegheny, Central Western, and Southwestern districts was higher than a year ago. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

Week ended Saturday, September 1, 1928

Districts	1928	1927	1926
Eastern	256,421	249,771	262,952
Allegheny	225,409	225,127	233,511
Pocahontas	58,304	64,616	60,044
Southern	145,790	160,672	156,031
Northwestern	174,422	175,436	179,039
Central Western	168,582	156,649	168,103
Southwestern	88,020	85,089	83,768
Total Western Districts	431,024	417,174	430,910
Total All Roads	1,116,948	1,117,360	1,143,448
Commodities			
Grain and Grain Products	57,341	60,547	55,692
Live Stock	27,697	30,058	33,131
Coal	178,093	190,639	197,280
Coke	9,826	10,133	12,157
Forest Products	67,129	69,459	71,774
Ore	68,607	61,633	74,803
Merchandise L.C.L.	263,587	267,275	266,691
Miscellaneous	444,668	427,616	431,920
September 1	1,116,948	1,117,360	1,143,448
August 25	1,080,840	1,109,341	1,128,563
August 18	1,056,905	1,066,828	1,081,503
August 11	1,044,442	1,049,639	1,102,660
August 4	1,048,622	1,024,038	1,075,392
Cumulative total, 35 weeks	33,747,793	34,802,007	35,012,916

Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended September 1 totalled 73,598 cars, an increase of 2,723 cars over the previous week and an increase of 9,966 cars over the same week last year.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada		
September 1, 1928	73,598	40,289
August 25, 1928	70,875	39,343
August 18, 1928	68,731	39,886
September 3, 1927	63,632	37,819
Cumulative Totals for Canada		
September 1, 1928	2,280,783	1,365,440
September 3, 1927	2,133,227	1,325,492
September 4, 1926	2,026,947	1,303,180

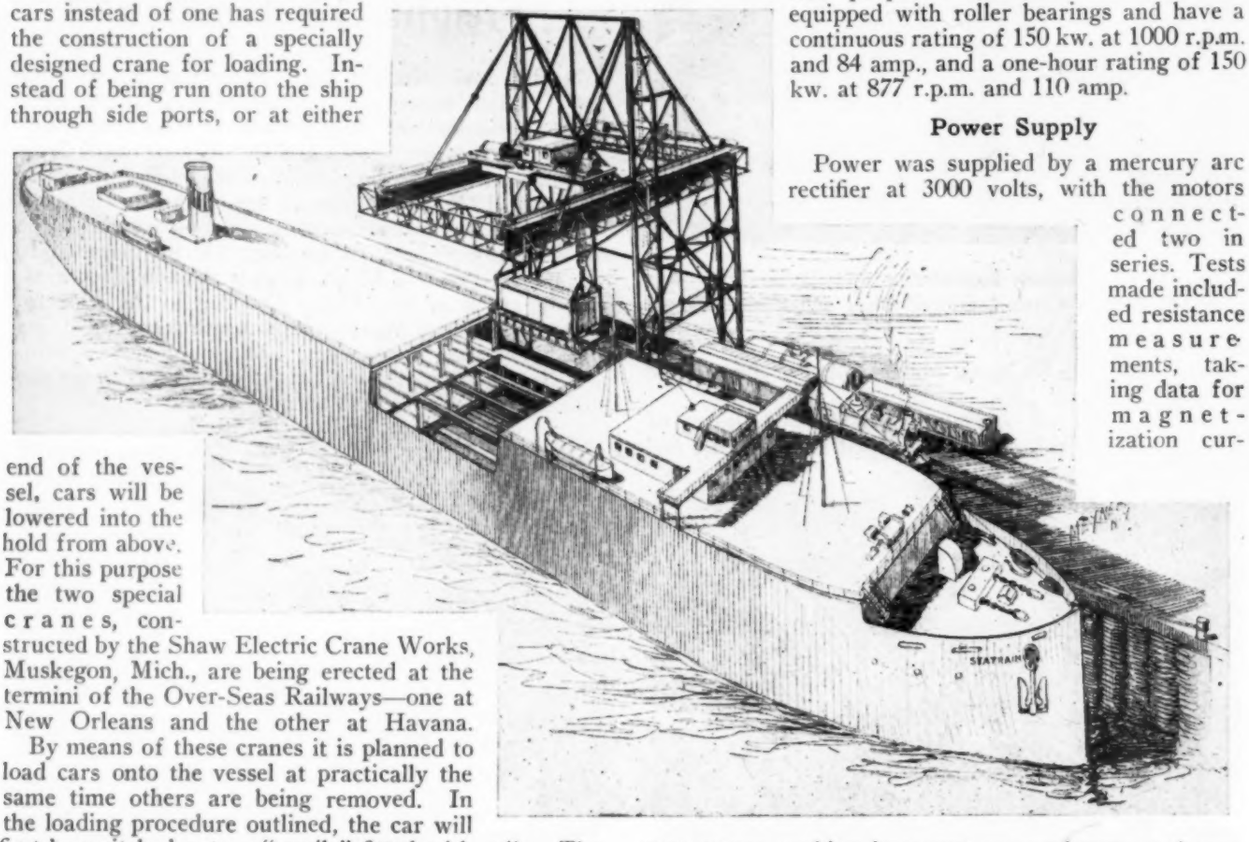
A Multiple-Deck Vessel For Car Ferry Service

THE Over-Seas Railways, Inc., has under construction a multiple-deck vessel with which it is planned to establish a car ferry service between New Orleans, La., and Havana, Cuba. This new-type vessel, which is being built in England, will have a capacity of 95 cars and is scheduled to be launched during the present month.

Cars Carried in Hold

Unlike the conventional car ferry, the "Seatrain," as the new vessel will be named, introduces the principle of carrying cars in the hold and thus, by loading in three tiers, trebles the car capacity without any increase in ship length. Each deck will be fitted with four tracks.

This use of three decks for cars instead of one has required the construction of a specially designed crane for loading. Instead of being run onto the ship through side ports, or at either end of the vessel, cars will be lowered into the hold from above. For this purpose the two special cranes, constructed by the Shaw Electric Crane Works, Muskegon, Mich., are being erected at the termini of the Over-Seas Railways—one at New Orleans and the other at Havana.



By means of these cranes it is planned to load cars onto the vessel at practically the same time others are being removed. In the loading procedure outlined, the car will first be switched onto a "cradle" fitted with rails. The crane will then lift the cradle with the car over the vessel's side and down into the hold. A mechanical car puller will there remove the car from the cradle, placing it on tracks in the hold. While the cradle is still in place in the hold a car intended for discharge will be rolled onto it. Reversing the process, the crane will then lift the cradle containing the car from the hold and place it on the dock where the discharged car will be removed and the next car for loading rolled into its place. When one deck has been filled the cradles, fitting the hatchway, act as hatch covers and each will hold a car while the vessel is in transit.

The loading and unloading is expected to consume about 10 hours, while 52 hours is allotted for the trip between the New Orleans and Havana termini. Weekly sailings are planned from each port with the inauguration of service in December of this year. Connections will be made with all railways entering New Orleans and with the United Railways of Havana at Havana.

3000-Volt Traction Motors Tested by A. B. B. Company

DURING the past week, the American Brown-Boveri Electric Corporation has been making demonstration tests of 3000-volt direct current railway motors, for the purpose of showing that this company is in a position to supply direct current as well as alternating current machinery for heavy electric traction purposes. The motors tested are equipped with roller bearings and have a continuous rating of 150 kw. at 1000 r.p.m. and 84 amp., and a one-hour rating of 150 kw. at 877 r.p.m. and 110 amp.

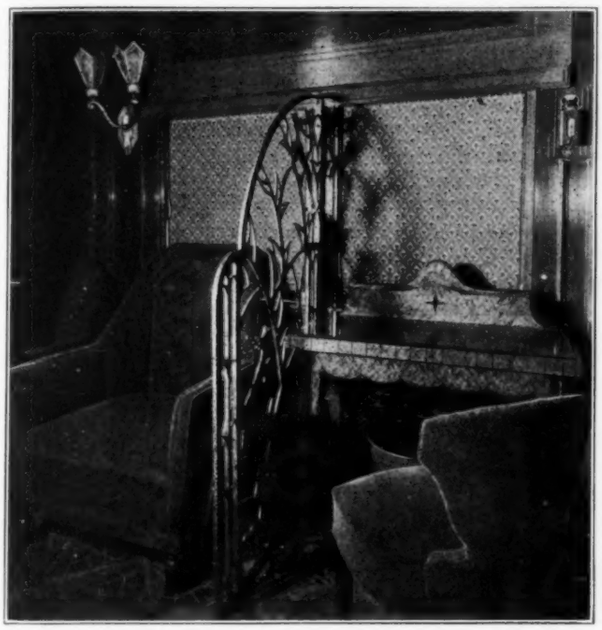
Power Supply

Power was supplied by a mercury arc rectifier at 3000 volts, with the motors connected two in series. Tests made included resistance measurements, taking data for magnetization current curves, making heat runs at continuous and one-hour ratings, determining the maximum current for safe commutation, taking data for speed curves, varying load suddenly from 110 to 200 amp. interrupting the power supply of motors running at full load and reapplying the power after an interval of one second. No sparking at the brushes could be observed during either of the last two mentioned tests. The motors were built by the Tecnomasio Italiano Brown Boveri Corporation, North Milan, Italy. At the same time, tests were run on alternating current traction motors built at the Camden, N. J., plant of the American Brown-Boveri Electric Corporation.

Milwaukee Gets New Club Cars

Characterized by ultra-modern architectural and decorative treatment of the interiors

TWO steel compartment sleeping cars have been converted recently into the latest type modern club cars at the Milwaukee shops of the Chicago, Milwaukee, St. Paul & Pacific, these cars now being used on the first section of the Pioneer Limited, operating between Chicago, Milwaukee, St. Paul and Minneapolis. The cars, named the Hennepin and the Ramsey after the two counties in which Minneapolis and St. Paul are located, have not been changed essentially from Milwaukee standards in body and truck design, except that the trucks are equipped with roller bearings,



The Wrought Iron Gate with Bronze Stags—An Outstanding Artistic Feature

furnished by the Timken Roller Bearing Company, Canton, Ohio.

The cars, which are almost 80 ft. long over the platforms, are divided practically in the center by a buffet, 7 ft. 6 in long, each equipped with lockers, refrigerator, sink, alcohol broiler, copper nickeled urn, and other equipment necessary in serving light refreshments. The two lounge rooms on either side of the buffet have a seating capacity of 22 each, and are equipped with chairs and sofas, which are not only comfortable but

Lounge Room Exemplifying Modernistic Trend in Milwaukee Club Car Decoration

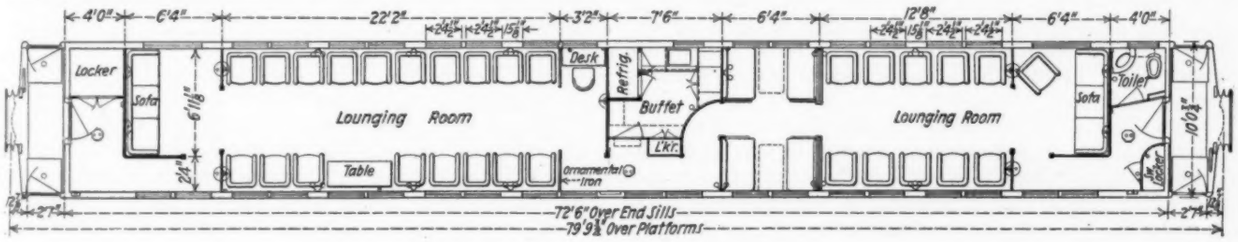
highly attractive. In one lounge room there are two sections with cross seats upholstered in leather and equipped with tables for card playing. The other lounge room has a beautifully finished table on one side to break up the uniformity of the seating arrangement, and provision is made on the other side for an attractively designed writing desk and chair. Thermostatic heat control is provided in each lounge room.

Interior Treatment Distinctly Modern

The interior views of one of the cars show that, in accordance with the present trend in railway passenger car decoration, the interior architecture and furnishings of the new cars are distinctly modern in character. In the decorative treatment, straight lines have been worked out in striking effects. The walls and woodwork are in soft tones of green, making an effective combination with the gleaming silver panelled ceiling.

The electric light fixtures are entirely different from those ordinarily used in railroad cars. The metal part is old silver and the glass design is taken from the modern French Lalique style There are several styles of fixtures, but all of similar treatment.

Perhaps the most striking features of the cars are



Floor Plan of the Club Car Hennepin

the wrought iron gates carried out in Swedish silver with stags of bronze. These gates replace the low wooden dividing panels, ordinarily used to give an air of seclusion to the writing desk and to separate the end chair in one of the lounge rooms from the passageway.

The window shades, also, are unique, the design being taken from that created by Brant, a world renowned French artist. To harmonize with the furniture, this design is brought out in beautiful shades of burnt orange, silver, and green. The furniture is a beautifully-grained birdseye maple, the sofa and chairs being upholstered in wool epingle and mohair frieze. Each piece is distinctively modern in design and color treatment.

One of the Attractively Upholstered and Equipped Sections Provided for Card Playing

Practically the entire car interior equipment, down to the small accessories such as smoking stands, was especially planned and executed by Marshall Field & Company, Wholesale, Chicago, after a careful comparison of the latest ideas in artistic decoration both in this country and abroad.

Valuation Reports to Be Revised to Later Dates

WASHINGTON, D. C.

THE Interstate Commerce Commission has served upon the railroads and made public on September 7 a series of orders accompanied by regulations and instructions for the reporting by the carriers of the data to be used by the commission in revising and extending to later dates its primary basic valuations, which have heretofore been issued in either final or tentative form.

June 30 marked the close of the three-year program on which the Congressional appropriations for the commission's valuation work had been based and during which the so-called primary valuations were to be completed. A second three-year program for bringing the valuations down to December 31, 1927, began on July 1, although all of the work on the primary valuations has not yet been completed.

All of the hearings on protests against the tentative valuations had been completed by June 30 except four, but final valuation reports had been issued on that date in only 693 cases out of 1,035, covering 31 per cent of the mileage. During the summer, however, many additional final reports have been issued.

The new regulations and instructions provide for the reporting of the cost of property added or retired since the date of the primary valuations or of changes reported since under Valuation Order No. 3, up to December 31, 1927, or other dates to be fixed by the director of the Bureau of Valuation. They were issued in the form of four printed pamphlets, containing Valuation Order No. 25, the instructions relating to the preparation of the revised accounting report, Supplements 4 and 5 to Valuation Order No. 3, and an outline of a plan for bringing land valuations to December 31, 1927, and such other date or dates as may be fixed. The regulations and instructions were drawn up by the Bureau of Valuation after conferences with committees representing the carriers, and were approved by Division 1 of the commission.

Supplement 4 to Valuation Order No. 3 is a list of units to be used in the preparation of completion reports and the record of property changes. Supplement 5 contains the instructions to govern the preparation and filing of B. V. Form No. 588 (units added and retired since valuation date). Each carrier, by this order, is required to file within 90 days from the date prescribed by the director statement of the property added since the inventory or since the date of any such previous list, and its cost, and a statement of the property retired or released since the inventory or since the date of any such previous list, and its cost, to December 31, 1927, or to such other date or dates as may be indicated, in accordance with the list of property units attached to Supplement No. 4 Valuation Order No. 3, Second Revised Issue, and the detailed instructions which are made a part of the order.

The amounts reported as the cost of property added are to be only those that affect the investment in road and equipment except as otherwise provided with respect to lands, miscellaneous physical property, and the cost of road acquired through purchase, merger, consolidation or reorganization, and reconstruction of road so acquired. The cost reported need be only the total cost of each structure or facility as defined in section 21 of the instructions, the total cost for each mass account, as defined in section 20, and the detail cost prescribed by the schedules. Costs may be shown in greater detail than indicated.

The data required by Valuation Order No. 25 is also to be filed within 90 days from the date prescribed by the director. The reports include those on the corporate history of the carrier, development of fixed physical property, history of corporate financing, results of corporate operations, investment in road and equipment, improvements on leased railway property, miscellaneous physical property, aids, gifts, grants and donations, leased railway property and general balance sheet.

ASSEMBLYMAN ALVIN C. REIS, in a recent address at Platteville, Wis., said that there would be a determined effort in the next Wisconsin legislature to strike from the income tax law the clause which exempts from income taxation the income from property which pays taxes directly to the state treasury in another form of taxation. Several attempts of this kind have been made in past years, the most determined having been in 1911 and in 1927.

Improved Traffic Helps C. & N. W.

Expenditures further increased efficiency and aid in diverting gross earnings into net

FREIGHT business on the Chicago & North Western has been heavier during the first six months of the current year than for any similar period since 1923. Net ton-miles for the first half of 1928 totaled 4,879,708,000, an increase of 4.6 per cent over the same period last year, but still nearly 12 per cent less than for the same period in 1923. There is the important difference between 1923 and this year, however, that in the first six months then the road's operating ratio was 86, whereas for the first half of 1928 it had been reduced to 79.4.

Since the road is in a position to handle a considerable increase in traffic without a proportionate increase in expenses, the improved volume of business—present, and in prospect as a result of good crops—should make appropriate returns to net earnings.

Great Improvement in Operating Efficiency

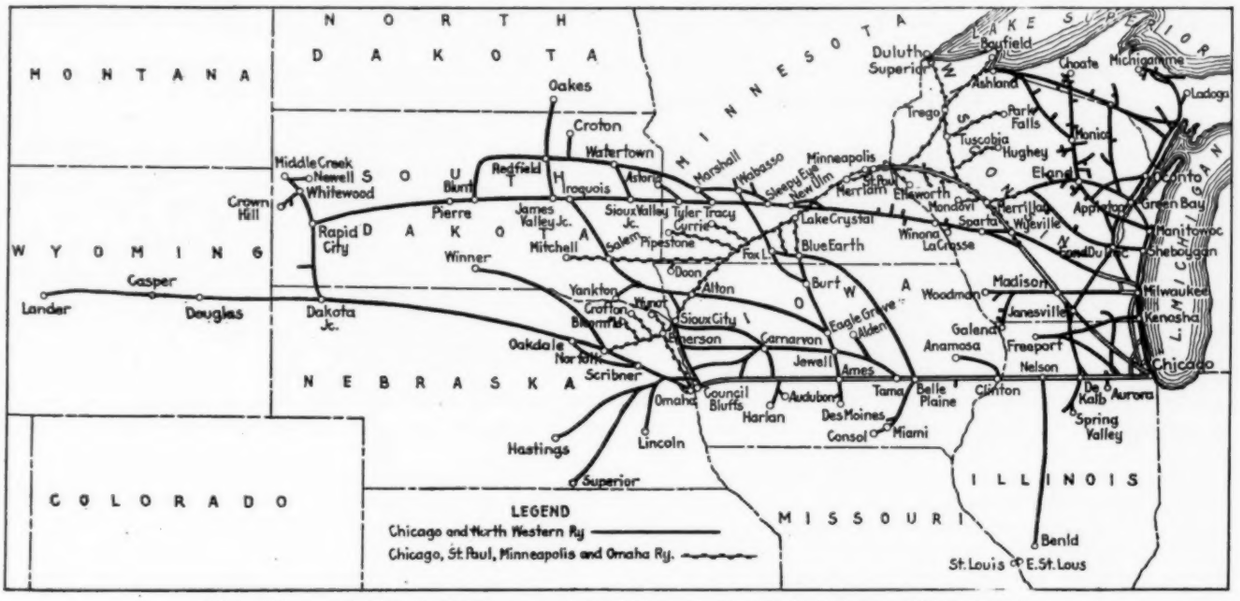
Increased traffic, however, is not the only factor in the North Western's situation which is worthy of notice. Mention has been made of the improvement in the operating ratio since the first half of 1923. Table 1, giving comparisons of selected operating statistics for the first half of 1928 and for the same period of 1923 shows wherein this improvement has been effected.

For instance, in the first half of 1928 the road moved virtually the same volume of gross ton-miles as in the same period five years previously—but it performed this task with a saving of 13.3 per cent in freight train-miles, 15.4 per cent in locomotive miles and 24.9 per cent in freight train-hours. Gross tons per train

Table 1—Comparison of Selected Freight Operating Statistics

First 6 Months of 1928 Compared with Same Period of 1923

	6 months 1928	6 months 1923	Per cent of change Inc.	Dec.
Gross ton-miles (thousands)	12,502,580	12,514,100		0.1
Net ton-miles (thousands)	4,879,708	5,541,758		11.9
Freight train-miles (thousands)	8,557	10,213		13.3
Freight locomotive-miles (thousands)	9,097	10,758		15.4
Freight car-miles (thousands)	339,835	336,394	1.0	
Freight train-hours	661,111	880,688		24.9
Car-miles per day	25.5	24.4	4.5	
Net tons per loaded car	22.9	25.2		9.1
Per cent loaded to total car-miles	62.6	65.2		4.0
Net ton-miles per car day	366	401		8.7
Freight cars per train	40.7	33.9	20.0	
Gross tons per train	1,461	1,225	19.3	
Net tons per train	570	543	5.0	
Train speed, miles per train-hour	12.8	11.6	10.3	
Gross ton-miles per train-hour	18,770	14,209	32.0	
Net ton-miles per train-hour	7,326	6,293	16.4	
Lb. coal per 1,000 gross ton-miles	135	181		25.4
Loco. miles per loco. day	54.3	54.6		0.5
Per cent freight locos. unserviceable	14.3	21.2		32.5
Per cent freight cars unserviceable	6.6	6.9		4.3



The Chicago & North Western and the Chicago, St. Paul, Minneapolis & Omaha

Table 2—Additions and Betterments to Road—Selected Items

	Rails and Other Track Material	Bridges, Trestles & Culverts	Track, Elev. & Depression	Add'l Yard Track and Sidings	Signals & Interlockings & Train Control	Fuel Stations	Water Stations	Shop Bldgs. & Engine Houses	Shop Machy. & Tools	Total Expenditures for Road
1923	$924,814	$1,641,399	$1,628,759	$1,370,137	$128,598	$318,744	$208,776	$773,700	$283,291	$9,134,647
1924	1,632,178	1,333,902	774,070	1,374,923	62,947	44,569	97,932	396,220	50,848	8,694,928
1925	799,715	1,002,983	107,065	538,524	361,944	.....	106,264	113,593	74,619	5,957,275
1926	1,482,887	1,192,931	242,197	1,319,136	281,383	139,689	298,210	706,624	530,573	9,509,274
1927	1,637,034	1,388,029	1,218,858	1,631,026	432,160		277,884	533,629	221,472	13,202,946

Other outstanding improvements to roadway and structures include $5,646,382 spent on Proviso Yard in 1925-27 and $2,534,337 on dock improvements in 1924-25.

increased 19.3 per cent and gross ton-miles per train-hour 32 per cent. Fuel efficiency, as measured in pounds of coal per 1,000 gross ton-miles, showed a 25.4 per cent improvement.

Large Sums for Improved Facilities

The road from the beginning of 1923 to the end of 1927 increased its investment in road and equipment $73,917,496. The nature of these expenditures are set forth in Table 2, Improvements to Roadway and Structures, and Table 3, Additions to Equipment. Outstanding among the improvements undertaken in recent years have been the new yard facilities at Proviso (*Railway Age*, November 5, 1927, page 876), the installation of modern coal handling and water treating plants at many points on the system, added engine terminal facilities at several places, strengthening and renewal of bridges, several major grade reduction projects, longer passing tracks, many new station structures, ore dock improvements at Escanaba, Mich., and Ashland, Wis., a new grain elevator at Green Bay, Wis., and two enlarged tie-treating plants.

Table 3—New Rolling Stock and Motive Power

	Freight and Work Train Cars	Passenger Train Cars	Locomotives	Total Equipment Expenditure
1923	6,985	250	150	$22,310,814
1924	1,008	...	...	2,608,864
1925	3,200	51	...	7,912,425
1926	1,929	3	2	4,660,987
1927	4,314	142	21	28,587,334

At the end of July of the current year the road had 1946 locomotives of an average tractive force of 36,371 lb. At the same period in 1923, 2092 locomotives of an average tractive effort of 33,439 lb. were in service. In other words, in the five-year interval average tractive force increased 8.8 per cent, while the number of units in service declined 7 per cent.

The North Western's traffic is well diversified. In 1927 products of agriculture made up 12.08 per cent of the total tonnage; products of animals, 4.53 per cent; products of mines, 48.66 per cent (bituminous coal 12.72 per cent and iron ore 17.31 per cent); products of forests, 10.18 per cent; manufactures and miscellaneous, 21.16 per cent; and l.c.l., 3.39 per cent. The average haul was 147 miles and the average earning 1.261 cents per ton-mile.

Earnings from passenger train service in 1927 totaled $35,843,723 in 1927, a decrease of 5 per cent from the 1926 total, and of 13.5 per cent from the 1923 total. Passenger train earnings in 1927 represented 23.9 per cent of operating revenues.

Table 4 shows the earnings and expenses of the North Western since 1916. From this it will be noted that net railway operating income has in no year since federal control reached the road's standard return of $23,201,016. In spite of the disappointing development of traffic and earnings since the war, however, the road has been able to earn substantial balances in excess of its dividend requirements (rate reduced from 5 per cent to 4 per cent in 1923). Earnings in 1927 were $5.27 a share on the common after allowing for preferred dividends of 7 per cent. President Sargent was recently quoted as expressing the opinion that the earnings for the present year would average about $6 per share.

In 1927 the North Western's non-operating income totaled $2,316,246, being 9.9 per cent of gross income. Net income was 46 per cent of gross income.

Financing during 1927 consisted of the sale of $20,572,000 first and refunding mortgage 4½ per cent bonds and $4,560,000 of equipment trust certificates. Some $2,698,900 of outstanding obligations were retired and $1,702,443 of common stock was issued in exchange for Chicago, St. Paul, Minneapolis & Omaha stock. During the current year several equipment trust issues have been sold and an application for authority to authenticate and deliver $28,456,000 first and refunding mortgage bonds is now pending before the Interstate Commerce Commission. The only early maturities the company has to meet total $28,011,000 falling due during the next two years, which bear interest varying from 5 to 7 per cent.

Table 4—Operating Results, Selected Items, 1916 to 1927

Year	Mileage	Revenue Ton Miles (Thousands)	Revenue Passenger Miles (Thousands)	Revenue Per Ton Mile, Cents	Total Operating Revenues	Total Operating Expenses	Net Operating Revenues	Operating Ratio	Net Railway Operating Income	Net after Charges	Net Charges for Additions and Betterments
1916	8,108	8,130,953	1,158,625	0.80	$97,978,844	$65,120,827	$32,858,017	66.46	.....	$20,368,924	$3,894,781
1917	8,108	9,220,973	1,262,626	0.78	108,264,983	78,758,989	29,505,995	72.75	.....	17,125,031	18,492,434
1918	8,090	9,358,287	1,255,192	0.936	127,295,678	109,498,572	17,797,106	86.02	$12,498,939	14,482,711	8,358,402
1919	8,090	8,294,483	1,412,671	1.110	139,589,915	119,579,387	20,010,528	85.66	12,771,197	13,982,582	5,844,310
1920	8,298	9,559,270	1,444,559	1.156	165,692,399	157,110,200	8,582,199	94.2	—1,609,232	12,545,857	25,129,728
1921	8,403	6,775,908	1,184,674	1.412	144,775,476	129,091,428	15,684,048	89.17	6,651,137	—1,245,433	12,030,791
1922	8,404	7,579,554	1,078,241	1.329	146,100,437	119,191,134	26,909,303	81.58	17,036,305	8,897,536	1,791,538
1923	8,463	9,248,615	1,122,116	1.223	160,425,965	132,507,531	27,918,434	82.60	15,843,375	8,737,468	27,442,574
1924	8,463	8,290,313	1,097,745	1.249	149,454,584	120,536,645	28,917,939	80.65	16,784,051	7,671,324	8,763,638
1925	8,468	8,286,548	1,052,381	1.266	148,538,269	115,626,056	32,912,214	77.84	21,108,750	10,784,578	8,326,723
1926	8,459	8,687,781	1,017,895	1.269	154,335,724	120,588,383	33,747,340	78.13	22,295,139	12,419,841	9,679,837
1927	8,465	8,590,153	960,233	1.261	150,132,959	116,994,267	33,138,692	77.93	20,257,693	9,926,062	19,704,723

Standard return for operations during federal control, or average net railway operating income for three years ended June 30, 1917, $23,201,016.

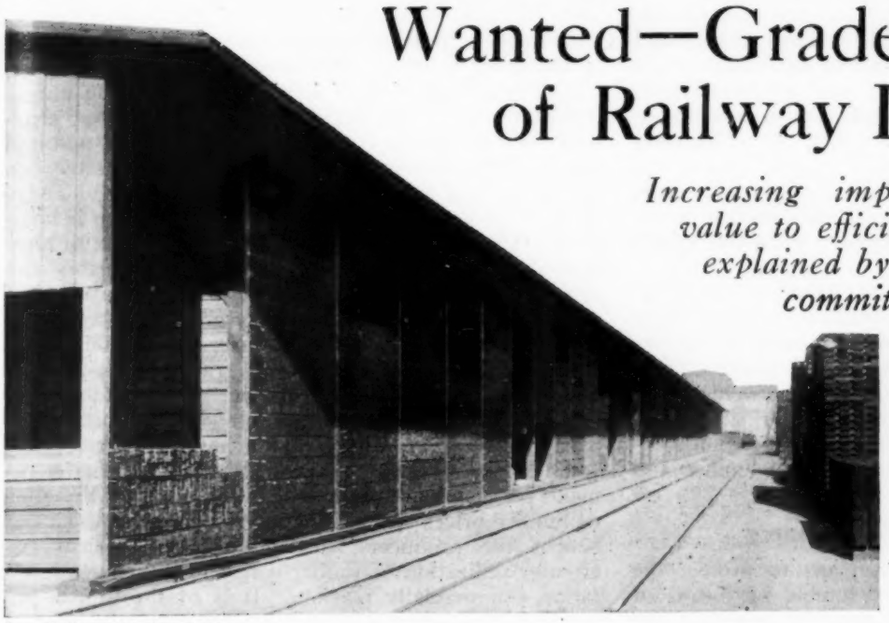
* * *

Photograph by Hoag & Ford, Los Angeles.

Gravel Ballasted Track on the Main Line of the Southern Pacific of Mexico in the State of Nayarit

Wanted—Grade Marking of Railway Lumber

*Increasing importance and value to efficient buying explained by Hoover committee**



In a Railway Lumber Yard

TO some consumers lumber is just lumber. They know little about the properties and characteristics of the many species of wood. Some species are best suited for construction purposes because of their strength and decay-resisting qualities. Others are characterized by attractive grain and texture and are therefore used for furniture and other fabricated articles. Consumers should know the relative merits of each species in order to make proper selection for their purposes.

Of equal or greater importance to the consumers is some definite guide as to lumber grades. If a system of standard grade marking could be instituted whereby every piece of lumber would be marked with the grade which it represents, important savings could be effected for both lumber producers and lumber buyers. The absence of these quality marks on lumber causes much uncertainty on the part of buyers, and higher and more expensive grades are often purchased where lower and less expensive qualities could be used. A definite quality indication on lumber would enable the consumer to specify and select the grades most economical for his needs.

Need for Grade Marking

Until recent years most of the lumber manufactured in the United States was purchased locally. The buyers were familiar with the species growing in their own localities and there was little or no danger of substitution of inferior woods. Timber was so cheap and plentiful that only the choice cuts of the log were made into lumber and lower grades were seldom marketed. Hence there was little or no danger of grade substitution. In these circumstances grade marking would have meant trouble and expense with no worthwhile advantage gained. With the development of the country and the growth of cities, lumber began to move farther and farther from points of manufacture. Buyers in centers remote from sources of supply could not know all species which they were called on to purchase. As local supplies became exhausted and transportation over longer distances became the rule rather than the exception, prices advanced, competition grew, and a need arose for protecting the buyer against the substitution of grades and species. Varying rules for grading different species added to the buyer's confusion. Today lumber is usually bought on the basis of price rather than quality.

While the consumer's confidence in lumber has been shaken by an increasing uncertainty as to the quality of the product, the lumber trade is in no different position from that of any other branch of industry that fails to mark its products for convenient and definite identification by consumers.

Lumber is often transported hundreds of miles from the mill to the consuming points. It passes through many hands, is unloaded and reloaded, yarded, and shifted. Several species and qualities are often loaded in one car or kept in storage yards for long periods. It is too much to expect the average car loader or yard laborer to have an expert knowledge of lumber, and the mixing of grades and species may, therefore, easily occur. While in most cases the mixing of grades is a result of inexperience, there are many instances where advantage is taken of the consumers' ignorance, and grades and species are mixed for the purpose of making additional profits.

The main incentive for grade marking must come from the consumers demanding grade-marked lumber, and this demand must be so insistent that the grade marking of lumber will become a general practice.

Lumber has been grade marked for decades in most other countries where the merchandising of lumber products has been carried on efficiently. It is safe to say that no standard sawmill in Europe is failing to grade mark its products, and many of them have been doing so for a century or more. While American lumber exporters have grade-marked products for foreign consumption, it was not until after the World War that some lumber associations instituted for their members the grade marking of lumber, supported by association inspection for the domestic market. A sufficient time has now passed to pronounce the grade marking of lumber entirely feasible and practical, and it is recognized by progressive producers and distributors as an important factor in rendering better service to the consumers and decreasing distribution costs.

The grade marking of lumber started logically with

* The information contained in this article is abstracted from a report of the Sub-committee on Grade Marking of the National Committee on Wood Utilization, which has been issued by the U. S. Department of Commerce. This committee was organized in 1925 by direction of President Coolidge to work for closer utilization of timber resources, and comprises, about 140 members, representing manufacturers, distributors and consumers of forest products. The Secretary of Commerce is chairman of the National Committee, which has headquarters in the Department of Commerce, Washington, D. C., and R. H. Aishton, president, American Railway Association, is chairman of the sub-committee on grade marking. John Foley, assistant to purchasing agent and formerly forester of the Pennsylvania, and C. C. Cook, engineer maintenance of way, Baltimore & Ohio, are also members.

producers of refined lumber items. Thus, maple and oak flooring have been grade marked for many years. In the softwood field the Southern Pine Association, of New Orleans, was the first association to take up the system; later the Northern Hemlock & Hardwood Manufacturers' Association, of Oshkosh, Wis.; the West Coast Lumbermen's Association, of Seattle, Wash.; the Arkansas Soft Pine Bureau, Little Rock, Ark.; and other organizations adopted the grade-marking system.

In January, 1928, the National Lumber Manufacturers' Association decided to institute a combined trade and grade marking system for its members. Under this plan, each piece of lumber produced in accordance with American Lumber Standards will be provided with a regional association or species grade mark indicating its quality and source. The National Association symbol will be included on properly seasoned lumber and on structural timbers.

Plans Protection of Consumers

This association, furthermore, plans to protect the consumers of such grade-marked lumber by means of a definite financial guaranty of the correctness of the grades as marked on lumber sold by its members. The association would pay at once any claims which, upon reinspection, have been sustained, thus relieving the customer of the necessity of dealing with the individual producers, who are often located long distances from the points of consumption.

These grade marks will be applied to lumber manufactured and graded in accordance with American Lumber Standards promulgated and approved by the Department of Commerce. The importance of this step in promoting universal grade marking of lumber is readily apparent, since this organization, which represents the entire lumber manufacturing industry, is a federation of the following regional associations: California Redwood Association, California White and Sugar Pine Manufacturers' Association, Florida Dense Long Leaf Pine Manufacturers, Hardwood Manufacturers' Institute, North Carolina Pine Association, Northern Hemlock and Hardwood Manufacturers' Association, Northern Pine Manufacturers' Association, Southern Cypress Manufacturers' Association, Southern Pine Association, West Coast Lumbermen's Association, Western Forestry and Conservation Association, and the Western Pine Manufacturers' Association.

Advantages of Grade Marking

Just as a customer who buys silver with a "sterling" mark shows that he is receiving the proper fineness of silver, so will the purchaser of conscientiously grade-marked lumber know that he is getting a certified standard quality. Undoubtedly many consumers of grade-marked lumber will find that a less expensive grade of lumber will do for many purposes where a more expensive grade had previously been used—the result of custom handed down from times when lumber was cheaper and more plentiful. Many architects and contractors have testified that they have always specified or ordered No. 1 common, where lower grades would have served the purpose equally well. It was the uncertainty as to receiving the grade specified that made them demand better quality than was actually needed for their purpose. The difference in price between the various grades may be 30 to 60 per cent, and even more in some instances. Intelligent specification of grades naturally depends on a knowledge of defects permissible in each grade, and grade marks will aid consumers in obtaining a better understanding of lumber grades.

The grade marking of lumber is also of the utmost importance in an intelligent utilization of forest products. Virgin timber is gradually disappearing, and it is evident that the Nation must depend ultimately on second-growth timber of smaller dimensions. Today more second-growth timber than virgin growth is being used. This naturally means a decrease in the production of high-grade lumber, yet in the face of this condition the demand for the high grades is at present much stronger than for the lower grades. The lumber mills find difficulty in making an even distribution of the manufacturing cost over all grades produced, and large quantities of common lumber are wasted because under present conditions there is no market. This waste can only be recovered by charging higher prices for high-grade lumber. By grade marking a better demand for common lumber will result, and a stabilization of lumber prices and production will follow, which will benefit the producers, distributors, and consumers. Greater utilization of timber will help to make reforestation commercially feasible. It is of the utmost importance that there be a clear understanding of the fact that reforestation will not be possible until a larger percentage of the tree is marketed.

Expert Grading Necessary

The grading of lumber is not based upon laboratory analysis but is governed by the presence or absence of defects, such as knots, checks, and decay. There are no two pieces of wood identical in appearance, and grading rules can only specify the maximum number of defects allowed in each grade, leaving it to the expert grader to apply those rules in the light of common sense and long practical experience. The distinguishing mark indicating the grade of each piece should be applied by the grader at the sawmill. At any rate, misunderstandings and loss of time, money and good will have been some of the results of failure of producers to grade mark their lumber.

Grade-marked lumber carries the assurance of the producer that each piece is of the quality indicated. Mistakes will occur, as in any other business but the mill which intends to develop a market for grade-marked lumber will make right what is wrong without quibbling. The consumers know this. They would not buy grade-marked lumber unless they were definitely given this assurance.

Lower Grades Substituted

On the other hand, buyers have at times made claims and then on inspection substituted lumber of lower grades than they paid for. Grade marking would protect the mills against abuse of this kind. Inspection at the consuming point will therefore be simplified by grade marking, and greater confidence will be established between producer and consumer. It should also be born in mind that distributors have often been blamed in the past for poor quality of lumber, while with grade-marked stocks this responsibility would rest with the sawmills.

It is not only between consumer, distributor, and producer that disputes and misunderstandings have come about. Builders and contractors have ordered the lumber in accordance with the architect's specifications but received a lower grade than called for. The presence of grade marks will provide the necessary basis for the settling disputes of this kind in a satisfactory man-

ner. There would be few if any disputes of this nature under general grade-marking practice.

It is not only as to species and grades that the consumers are subjected to confusion. Prior to the establishment of the American Lumber Standards under the auspices of the Department of Commerce, as many as seven different thicknesses, all sold as 2-in. lumber, were on the market. The consumers of lumber produced in accordance with American Lumber Standards are protected at the present time, but without a grade mark the buyer can not know without actually measuring whether the lumber is made to American standards, as it is impossible to ascertain this at a glance. For this reason the National Lumber Manufacturers Association is instituting a marking system whereby lumber produced by association members in accordance with American Lumber Standards will be so grade marked. The grade marking of lumber to indicate conformity with American Lumber Standards is therefore an important project. If generally carried out, the consumer of grade-marked lumber will receive a triple protection —namely, assurance as to kind, quality and standard of dimensions.

Consumers, when asking for bids on grade-marked lumber, will place dealers on a fair competitive basis, because it would not be possible to secure an order and then without detection substitute one grade for another. This would not interfere with legitimate competition. Grade marks protect the honest contractor against unfair practices by people who take advantage of the consumers' ignorance of lumber species and grades.

It is often found, particularly by industrial consumers, that lumber produced in certain districts possesses qualities which are especially desirable for certain purposes. This applies particularly in regard to the texture of wood. Grade marks will aid in the selection of specialty stocks, and much trouble and unnecessary work will be eliminated, because the stock can be identified by the grade mark.

Efficient Marking Necessary

Before the placing of a grade mark on a piece of lumber will constitute any guaranty, grade marking must be done conscientiously; and there must be an adequate guaranty behind the grade mark so as to inspire the confidence of consumers. For this reason the grade marking of lumber has been taken up by several well-known associations which have protected their brands by registration. The system of association grade markings seems to offer many advantages to the consumers, inasmuch as it places a collective responsibility on the industry as a whole, thereby making it imperative to maintain grade standards. In case of fire, financial failures, or oversold conditions, the consumers will not suffer from the inability of any one association mill not filling orders, since satisfactory supplies may be obtained from other association members adhering to standard grade practices. These associations usually maintain competent inspection services which insure uniformity of grading practice among the members. Mills, which do not want to assume responsibility for their products, should not grade mark them, because the grade marks in such instances would tell the tale from the time the lumber leaves the mill until it is put into final consumption. Instead of creating a demand and repeat orders, the grade marks will in such instances make it possible for the consumer to avoid buying the product of an unreliable mill. If grade marking is done conscientiously and efficiently by the reliable producers generally, the public will soon learn to look upon nongrade-marked stock with justified suspicion.

Cost of Marked Lumber

An opportunity to "corner the market" for certain grades might be possible if grade marking were restricted to a few mills using this system for selfish gains. However, the grade marking of lumber is not a proprietary or patented system.

Anyone can grade mark stock, although, of course, each producer may have his marks protected by registration. Long experience has shown that lumber prices are not advanced by grade marking. It may seem at times, when comparing the cost of grade-marked lumber and that of nongrade-marked stocks, that grade marking increases the cost, but this is because consumers are quick to realize the advantage of buying grade-marked stock, and therefore, nonbranded lumber is at times marketed with difficulty and at a reduced price because there is no guaranty behind the article. Lumber in this regard is in no different position from any other article which is sold without a guaranty. Grade marking may force nongrade-marked stock down; it does not send grade-marked stock up.

Little Expense in Grade Marking

Contrary to general belief, the process of grade marking lumber involves very little expense to the mills. At the average sawmill one operator can grade mark from 100,000 to 150,000 ft. per day and more in some instances. The grading of lumber, however, is a much slower operation. This would make the cost of grade marking vary between 1½ and 3 cents per thousand feet. It is a negligible item, more than offset by the reduction in the expense of adjusting claims alone, and it has not been necessary to make any extra charge for this operation.

Nongrade-marked lumber often is not trimmed in a careful manner. This, of course, works to the detriment of the consumers, because it requires additional trimming on the job and freight charges on waste material. The grade marks can be applied only on smooth surfaces, therefore more care will be taken in preparation of the lumber. As a consequence, grade-marked lumber has a better appearance, and its use involves less waste.

* * *

On the Santa Fe at Colorado Springs

The Signal Association and Signal Appliance Association and Families

Signal Section, A. R. A., Convenes at Atlantic City

Economies accomplished by remote power switches and developments in highway crossing protection, among subjects discussed

THE Signal Section of the American Railway Association held its regular stated meeting at the Ambassador Hotel in Atlantic City, N. J., on September 11, 12 and 13, with an attendance of 306 members and 141 ladies as guests. C. F. Stoltz, signal engineer of the Cleveland, Cincinnati, Chicago & St. Louis, chairman of the section, presided at the meeting. The program included the reports of 10 committees and several papers.

Following the opening of the convention Tuesday morning, addresses were given by E. H. De Groot, Director, Bureau of Signals and Train Control Devices, Interstate Commerce Commission, and P. T. White, general superintendent, Cleveland, Cincinnati, Chicago & St. Louis. Abstracts of these addresses follow.

Mr. White, in discussing signaling as a benefit to train operation, explained the development of signaling from the early method of operating "on smoke," to the train order, the manual block, the automatic block, and finally the centralized dispatching system of directing train movements by signal indication without written train orders, which method, he said, would no doubt be used extensively as fast as traffic demands and older systems of signaling become worn out.

It was explained that in the opinion of operating officers, signaling should meet three fundamental requirements; safety should be given first consideration; simplicity and uniformity of the indication presented to enginemen are of next importance; and flexibility of the control of the system to permit minimum delay and interference to train movements is necessary to secure economical operation.

Mr. White explained that modern signal equipment could be used in so many ways to solve problems in train operation that signal and transportation officers should work together closely. It was his opinion that signaling has developed to a stage that it should no longer be handled as a part of the engineering department but rather should be included under the jurisdiction of the operating department, which change has been made on several roads.

In discussing the production of transportation as the accomplishment of all railroad men, Mr. White discouraged the idea of strict departmental lines and encouraged signal officers to live with transportation men, to ride engines and talk with operating officers. He explained that the signal department or any other organization should not build up within itself a complicated mechanism but rather that the job of the signal department is to help the operating department to move trains. The best results are to be accomplished by unity of purpose on essentials and independent liberty on details.

The Progress of Signaling and Train Control

By E. H. DeGroot

Director, Bureau of Signals and Train Control Devices, Interstate Commerce Commission

Train accidents usually result from a failure of one of two factors; the human or the inanimate. Responsibility for guarding against accidents due to human failures, falls into two divisions, corporation responsibility and employee responsibility. The corporation must select its employees carefully, give them adequate instruction, provide proper working conditions and equipment, and maintain discipline. Further, to meet its responsibility fully, a corporation must provide such devices as are practicable to check human fallibility. As against this, the employee must recognize his moral responsibility, take proper rest, and so conduct himself within the limits of the term "good habits," as to keep mentally and physically fit.

Failures resulting in accidents chargeable to the in-

animate element may be structural, as a broken part, or functional, as a failure of mechanism to operate as intended. Structural reliability lies in the direction of scientific specifications; careful selection of materials, good workmanship, and intelligent inspection. For protection from fundamental or mechanical failures reliance must be placed upon correct design, proper manufacturing methods, careful workmanship and inspection, and eternal vigilance in the matter of adequate maintenance and supervision.

As of January 1, 1928, there were 199,153 miles of road operated in passenger service, excluding lines operating only one engine. Automatic block signaling is in service on about 53,616 miles of road and manual block on 59,375 miles. Since 1925, automatic block signaling has been increasing rapidly while the manual block has been decreasing, such that if the two lines of the chart which represent these trends are projected throughout 1928, they should meet at the end of this year at approximately 57,000 miles of road for each.

With heavy fast trains and dense traffic, it is becoming both necessary and economical to replace the earlier types of automatic signaling; to install power-operated switch machines and signals remotely controlled; to provide signals and switches interconnected with dispatching systems so that train orders and their delays may be eliminated; and to add train stop and train control installations to guard against the results of human fallibility.

The Interstate Commerce Commission investigated 843 collisions for the period of July 1, 1911, to October 31, 1927; the number killed in these collisions being 2,550 and the number injured 14,271. Of these collisions, 388 were head-on collisions in which 1,192 persons were killed and 7,777 injured, while 318 were rear end collisions in which 1,035 were killed and 4,915 injured. Included in the 843 collisions were 150 collisions which occurred in automatic block signal or interlocking territory, due directly or indirectly, to the failure of enginemen to observe or be governed by signal indications. In these 150 collisions, the killed numbered 626, the injured 3,257, and the property loss, not including damage to lading, was $2,289,424. It is primarily to protect against this element of human fallibility that train-stop and train-control development has taken place.

As of August 31, 1928, there were in operation by the railroads of the country 11,213.3 miles of road, or 19,703.5 miles of main track equipped with train-stop or train-control devices. This includes 2,841.2 miles of road, or 4,557.4 miles of track equipped voluntarily by the railroads. Under the orders of the commission, 7,451 locomotives were equipped and in addition to this 201 foreign locomotives have been equipped for operation over 545 miles of joint track to which these orders were applied. There were 844 locomotives equipped in connection with the voluntary installations, bringing the total number of equipped locomotives to 8,496 or the equivalent of 19.68 per cent of the 43,154 locomotives reported to the commission as operating in road service during the month of June, 1928. Two interesting features in connection with these installations are the development of the cab signal as an adjunct of train-control, and the reliance upon these cab signals without wayside signals in a few instances.

These installations of train-stop and train-control devices have cost money, and the stockholders are entitled to a return on this money. Also, the passengers and employees are entitled to the protection which the devices were installed to give. If these installations are maintained as they should be, and the discipline in connection with their operation is on the proper plane, there is no reason why the safety-factor should not be secured consistently. Advantage should be taken, too, of every chance for more economical operation which these devices may offer through the possibility of avoiding stops, where this may be done safely, thus not only effecting a direct saving, but also reducing damage to equipment and lading, and increasing flexibility of operation. The fact that train control is in service on certain routes may well be used in advertisement to secure passenger traffic.

Motion Pictures of Centralized Dispatching System Shown

As a part of the program on the opening day, a motion picture was shown of the operation of the centralized dispatching system in service on the Pere Marquette which was installed by the Union Switch & Signal Company. This film was presented as a part of the report of the Committee on the Economics of Signaling.

The Economic Value of Remote Power Switch Machines

The Committee on Economics of Signaling, J. E. Saunders, (D. L. & W.) chairman, presented a report on the "The Economic Value of Remote Power Switch Machines," of which the following is an abstract.

This report, which covers the period from 1922 to

1926, includes three tabulations of the information submitted in answer to an inquiry sent out in 1927 to 78 Class I roads. Answers to the inquiry were received from 71 roads, 34 of which reported the use of remote power switch machines. The economic value has been considered under two heads:

1. Savings effected by the elimination of train stops through the use of remote power switch machines for the operation of switches at passing sidings, at ends of double track and at other points; the machines controlled from train order or block signal stations usually located at some distance (a mile or more) from the switches to be operated. In these cases the savings are due to the elimination of train stops.

2. Savings effected by the elimination of interlocking plants (usually small ones) by the installation of remote power switch machines operated from an adjacent interlocking, located some distance from the switches. In these cases, as the switches were previously operated from an interlocking plant, no train stops are eliminated, and the savings are the result of a reduction in labor through the release of the interlocking operators of the discontinued plant.

Table I—Economic Value of Remote Power Switch Machines

Number of roads reporting the installation of remote power switch machines during 1922-1926	34
Number of installations (Installations prior to 1922 not included)	193
Number of switch machines installed	310
Cost of installations (This cost covers 148 of the 193 installations. Detailed information for 45 installations not available.)	$1,431,572
Annual charges, maintenance, operation and interest (Annual charges at 22 per cent of first cost)	$314,425
Gross value of savings per year for 148 installations:	
(a) Savings due to the elimination of train stops:	
Number of train stops eliminated per year	379,527
Train hours saved per year *	61,033
Overtime crew hours saved per year	$269,158
Coal saved per year	$456,706
Total gross savings due to the elimination of train stops	$725,864
(b) Savings due to release of interlocking operators: Wages saved per year	$170,793
Total gross savings	$896,657
Deduct annual charges	$314,425
Net value of savings per year for 148 installations	$582,232
Annual return on investment over and above 6 per cent interest charges	40.7%

* This is equivalent to one train standing still for nearly 7 years.

Table I is a summary of the information received. It shows that remote power switch machines, by eliminating train stops and by releasing labor, have effected substantial economies, a net saving of over half a million dollars being shown by 148 installations. A return of 40 per cent on the investment more than justifies the installation of remote power switch machines.

Table II gives the details of the answers made by 12 roads, covering 24 installations. Six classes of installations are listed in columns A to F. Descriptions of these classes follows:

Column A—Two seven-machine installations, i.e., two installations for the operation of 14 switch machines or 7 per installation. These installations were made by a road in the central western region, one at a passing siding and one at the end of double track. The cost per installation was $27,500. The return on the investment was 64.9 per cent, savings being all due to the elimination of train stops.

Column B—One four-machine installation operating four switch machines made by a road in the southwestern region, at the end of double track, cost $13,177. The return on the investment was 82.8 per cent, and the savings were all due to the elimination of train stops.

Column C—Fifteen single-machine installations and one two-machine installation were made by six roads in five different regions; seven installations at passing sidings, four at ends of double track and five at other points. The average cost per installation was $5,424. The return on the investment was 55.7 per cent, with savings all due to the elimination of train stops.

The 16 installations are typical of the use of remote power switch machines for the operation of switches at passing sidings and at ends of double track. (See Table III for details of these installations).

Column D—One single-machine installation made by a road in the southern region at the end of double track cost $6,277, with a return on the investment of 15.8 per cent. This installation differs from the others as the savings are all due to saving in coal, nearly 1,100 tons a year.

Column E—one two-machine installation made by a road in the Great Lakes region at a junction of two tracks with four tracks, cost $15,046. The return on the investment was 27.1 per cent. Savings were all due to the release of labor by the elimination of an interlocking plant.

Column F—Two single-machine installations and one two-machine installation were made by two roads in the Great Lakes region; all at passing sidings. These three installations show a loss owing to the infrequent use of the passing sidings.

Table II—Details of Economic Value of 24 Installations of Remote Power Switch Machines

Items	Savings through eliminating train stops: Savings in overtime and coal A	B	C	Coal only D	Savings by releasing labor E	Installations showing losses F
1. Installations: Total number	2	1	16	1	1	3
2. Switch machines: Total number	14	4	17	1	2	4
3. *Savings per train stop:*						
(a) Train stops eliminated per installation per day	22.8	30	8.35	12		1.79
(b) Train time saved per stop, minutes	11	10	10.2	10		11.64
(c) Overtime saved per stop, minutes	2.6	4	3.58	.....	See notes	2.86
(d) Coal saved per stop, pounds	885.7	500	602	497	a and b†	591
(e) Overtime crew hour rate	$9.44	$5.79	$5.82	.....		$5.63
(f) Coal price per ton	$5.60	$3.50	$3.44	$2.18		$3.30
4. *Savings per installation per year:*						
(a) Train stops eliminated (3-a × 365)	8,326	10,950	3,046	4,380	.....	653
(b) Train hours saved (3-b × 4-a ÷ 60)	1,525	1,825	519	730	.....	126.7
(c) Overtime crew hours saved (3-c × 4-a ÷ 60)	360	730	182	.....	.....	31.1
(d) Coal saved, tons (3-d × 4-a ÷ 2,000)	3,688	2,737	917	1,088	.....	193
5. *Cost per installation*	$27,500	$13,177	$5,424	$6,277	$15,046	$6,987
(a) Annual charges, maintenance, operation and interest	$6,210	$2,899	$1,194	$1,381	$2,463	$1,537
(b) Per cent of cost (5-a ÷ 5)	22.5%	22%	22%	22%	16.4%	22%
6. *Gross value of savings per installation per year:*						
(a) Overtime crew hours saved (3-e × 4-c)	$ 3,398	$ 4,226	$1,059	.....	$5,870a	$ 175
(b) Coal saved (3-f × 4-d)	$20,653	$ 9,579	$3,155	$2,372	$ 677b	$ 636
(c) Total	$24,051	$13,805	$4,214	$2,372	$6,547	$ 811
(d) Deduct annual charges (5-a)	$ 6,210	$ 2,899	$1,194	$1,381	$2,463	$1,537
7. *Net value of savings per installation per year*	$17,841	$10,906	$3,020	$ 991	$4,084	—$ 726
8. *Annual return on investment* over and above 6 per cent interest charges (7 ÷ 5)	64.9%	82.8%	55.7%	15.8%	27.1%	—10.4%
9. Net savings per train stop eliminated (7 ÷ 4-a)	$2.14	$0.99	$0.99	$0.23	.....	.....

† a: Savings due to releasing labor—wages of interlocking operators.
b: Savings due to eliminating interlocking station—interest, depreciation, coal and supplies.

Table III shows that the cost per installation of the 16 installations of remote power switch machines listed in Table II, Column C, ranges from $8,225 to $3,500, with an average for the 16 installations of $5,424. The reported that, following a study of operating trains against the normal direction of traffic on multiple track lines, the superintendents had made a recommendation that was recently accepted by the Operating Division,

Table III—Details of Economic Value of the 16 Installations Listed in Table II, Column C

Items	Savings through Eliminating Train Stops					
	Ca	Cb	Cc	Cd	Ce	Cf
1. Installations: Total number	3	3	1	3	3	3
2. Switch machines: Total number	3	4	1	3	3	3
3. *Savings per train stop:*						
(a) Train stops eliminated per installation per day	8.87	21.7	5.4	3.83	3.33	5
(b) Train time saved per stop, minutes	10	7	10	27.63	12.25	10
(c) Overtime saved per stop, minutes	4.1	2.84	10	.62	7.34	3.33
(d) Coal saved per stop, pounds	887.5	430	530	1,219	730	311
(e) Overtime crew hour rate	$5.475	$6.03	$5.71	$10.19	$5.81	$5.29
(f) Coal price per ton	$5.36	$2.02	$3.64	$2.93	$3.85	$3.00
4. *Savings per installation per year:*						
(a) Train stops eliminated (3-a × 365)	3,236	7,909	1,980	1,399	1,216	1,825
(b) Train hours saved (3-b × 4-a ÷ 60)	539.3	922.6	330	644	248.3	304.2
(c) Overtime crew hours saved (3-c × 4-a ÷ 60)	221	374.6	330	14.4	149	101.3
(d) Coal saved, tons (3-d × 4-a ÷ 2,000)	1,436	1,700	525	852.7	444	283.7
5. *Cost per installation*	$8,225	$6,690	$5,665	$3,857	$4,767	$3,500
(a) Annual charges, maintenance, operation and interest	$1,810	$1,472	$1,248	$849	$1,049	$770
(b) Per cent of cost (5-a ÷ 5)	22%	22%	22%	22%	22%	22%
6. *Gross value of savings per installation per year:*						
(a) Overtime crew hours saved (3-e × 4-c)	$1,212	$2,259	$1,884	$ 146	$ 866	$ 536
(b) Coal saved (3-f × 4-d)	$7,698	$3,434	$1,911	$2,498	$1,709	$ 851
(c) Total	$8,910	$5,693	$3,795	$2,644	$2,575	$1,387
(d) Deduct annual charges (5-a)	$1,810	$1,472	$1,248	$ 849	$1,049	$ 770
7. *Net value of savings per installation per year*	$7,100	$4,221	$2,547	$1,795	$1,526	$ 617
8. *Annual return on investment* over and above 6 per cent interest charges (7 ÷ 5)	86.3%	63.1%	45%	46.5%	32%	17.6%
9. Net savings per train stop eliminated (7 ÷ 4-a)	$2.19	$0.53	$1.29	$1.28	$1.25	$0.34

spread of the different items is such that the use of general averages is apt to be misleading. All of these installations were undoubtedly made in automatic block signal territory and, therefore, do not include the cost of installing signals.

The savings were grouped under the following heads:

1. Savings due to the elimination of train stops. (a) Savings in overtime and coal (b) Savings in coal only.

2. Savings due to the release of labor (by consolidating or eliminating interlockings).

The committee gave consideration to the advisability of including the savings in per diem charges based on train hours saved. Table I shows that the 148 installations made an annual saving of 61,033 train hours or the equivalent of one train standing still for nearly seven years (2,543 days). Translating this into car days lost, based on a train of 44 cars (average train, Class I roads, 1926), there is a loss of 111,892 days. At a per diem charge of $1 a day, this amounts to $111,892, an item so large as to demand consideration.

Discussion

When presenting the report Chairman Saunders explained that the seven to eleven minutes per train-stop is the average. Wages can be saved only when overtime is incurred. Overtime varies from 0.62 minutes to 10 minutes per stop. Coal saved amounts to 31 to 44 lb. a minute. The overtime hourly rate for the train and engine crew is $5.71. Depreciation is to be included under maintenance. The question of per diem for cars was discussed and is to be referred to Bureau of Railway Economics as is also the question of federal income tax. The annual return on investment item is to be changed to read "per cent net saving on cost of installation" which change offsets the argument against including interest on the investment.

C. A. Mitchell, superintendent, New Haven, member of this committee and chairman of the Train Rules Committee of the American Association of Railroad Superintendents, reviewed the signaling program presented at the superintendents' convention in June and American Railway Association, reading as follows: "Where the movements are fully protected by signaling devices the full utilization of track systems should be taken advantage of and that in the absence of such signaling, operations should be conducted by train orders."

* * *

Photographs by Hoag & Ford, Los Angeles.

Above—Desert Land in the Yaqui Valley Along the Line of the Southern Pacific in Western Mexico Before Irrigating

Below—A Cotton Field in the Yaqui Valley in Sonora, Mex., Along the Southern Pacific Line.

Railway Funded Debt Maturities

WASHINGTON, D. C.

RAILWAY funded debt maturing in 1928 amounts to $250,489,336 and that maturing next year to $328,774,232, while maturities for 1930 amount to $416,508,630, according to a tabulation by the Bureau of Railway Economics, from the annual reports of the carriers to the Interstate Commerce Commission. The tabulation, which covers approximately 82 per cent of the funded debt of all steam railroads in the United States follows:

Railway Funded Debt Maturing Each Year, Based on Funded Debt Actually Outstanding on Dec. 31, 1927

RAILWAYS OF CLASS I—UNITED STATES

Period of maturity Calendar year	Mortgage bonds	Collateral trust bonds	Income bonds	Miscellaneous obligations	Equipment trust obligations	Total funded debt
1928	$120,502,200	$20,100,000	.....	$5,970,082	$103,917,054	$250,489,336
1929	82,512,054	77,543,000	$7,000,000	57,393,265	104,325,913	328,774,232
1930	135,750,560	160,171,500	.....	16,021,610	104,564,960	416,508,630
1931	168,105,020	32,093,012	6,000	525,568	102,601,953	303,331,553
1932	106,255,878	8,950,500	.....	751,928	100,992,707	216,951,013
1933	116,918,035	11,365,000	.....	70,417,977	96,945,340	295,646,352
1934	292,423,500	506,000	9,104,000	4,412,708	94,343,340	400,789,548
1935	83,793,400	17,509,400	3,376,800	14,454,049	91,590,486	210,724,135
1936	192,345,133	83,922,000	.....	5,020,776	63,386,077	344,673,986
1937	98,821,717	12,236,000	.....	12,729,876	59,219,598	183,007,191
1938	116,758,195	8,861,000	1,353,500	1,157,623	49,298,007	177,428,325
1939	128,447,339	506,000	200,446	4,474,606	32,189,007	165,817,398
1940	124,883,340	20,026,100	.....	5,033,316	19,586,405	169,529,161
1941	97,605,300	7,506,000	.....	8,527,776	11,479,800	125,118,876
1942	68,689,000	3,991,000	.....	29,776	4,598,800	77,308,576
1943	89,686,000	506,000	3,744,000	47,151	.....	93,983,151
1944	54,608,000	7,820,000	.....	29,429,776	.....	91,857,776
1945	125,823,920	506,000	275,350	29,776	.....	126,635,046
1946	106,152,300	506,000	315,000	428,420	.....	107,401,720
1947	161,157,000	506,000	.....	10,033,296	.....	171,696,296
1948	239,445,200	7,984,250	.....	39,032,976	.....	286,462,426
1949	231,835,900	40,604,325	25,000,000	29,776	.....	297,470,001
1950 to 1959	1,419,790,397	242,910,200	64,540,543	85,154,051	.....	1,812,395,191
1960 to 1969	960,733,875	50,000,000	80,567,567	62,361,000	.....	1,153,662,442
1970 to 1979	444,223,500	.....	.....	.....	.....	444,223,500
1980 to 1989	374,818,600	14,000	20,000,000	.....	.....	394,832,600
1990 to 1999	1,071,141,326	8,736,000	51,346,000	.....	.....	1,131,223,326
2000 to 2009	247,640,000	11,249,500	243,000	5,516,000	.....	264,648,500
2010 & upward	433,254,200	.....	.....	.....	.....	433,254,200
Due on default	12,600,000	.....	.....	9,989,700	.....	22,589,700
Subject to call	1,738,865	1,289,000	.....	4,637,135	.....	7,665,000
Not distributed	205,982	.....	.....	6,728,325	.....	6,934,307
Receipts outstanding for Funded Debt						361,878
Total outstanding debt Dec. 31, 1927	$7,908,665,736	$837,917,787	$267,072,206	$460,338,318	$1,039,039,447	$10,513,395,372

Short Lines Criticise Per Diem Rules

WASHINGTON, D. C.

ELABORATE briefs have been filed with the Interstate Commerce Commission by the American Short Line Railroad Association and some individual short lines and by the American Railway Association in connection with the commission's investigation of rules for car hire settlements, which was ordered following the filing of a petition by the short line association attacking the present per diem rules as being unfair in their application to non-subscriber short lines. The short lines object to paying the established per diem rate on foreign cars on the ground that the revenue derived from their short haul is insufficient and ask that compensation for the use of cars by such roads be placed either on a mileage basis or a basis of reclaim, free time or special basis, as a result of local agreements.

Among the points made by the short line association in a statement of conclusions are the following:

The leavening principle which makes the Per Diem system possible between large roads is the operation of the laws of AVERAGE since the "streaks of lean" short hauls, are counterbalanced by the "streaks of fat" intermediate and long hauls; and its application to those roads which have all "lean" short hauls and no "fat" intermediate or long hauls, is unbalanced and imposes unwarranted hardship.

Straight Per Diem without any Reclaim or elasticity to fit varying local conditions is impractical and unworkable, and it was originally intended that short lines should be dealt with by local agreements.

There is the same justification in principle for Reclaim or free time on short haul traffic under line haul tariffs as on short haul traffic under switching tariffs.

The testimony from 141 short lines clearly proves that the Per Diem basis is very unfair to short lines, and demonstrates the ample justification and the absolute necessity of either a mileage basis, a reclaim basis, a free time allowance, or other special bases such as the "Birmingham Southern" rules, especially in the form of the Northampton & Bath Plan, which is just as practical and suitable for non-industrial roads as for those which are affiliated with an industry.

A radical change in car hire bases, unaccompanied by a corresponding readjustment of revenue, is equivalent to a decrease, or an increase in the rates and divisions of the respective carriers participating in the joint haul.

A wholesale revision of rates and divisions is not practicable as a means of offsetting the results of an unfair and unjust system of car hire.

Car Owners as *Car Owners* are fairly and justly entitled to adequate compensation, in one form or another, for the use of their cars, regardless of *whether they be Subscribers or Non-Subscribers.*

It is undesirable as a general principle for short lines to be car owners because of economic waste in operation and maintenance, and because it would unduly burden the Trunk roads themselves, and is financially impracticable and in many cases wholly impossible.

That short lines should have representation and a vote in the formulation of Per Diem Rules by which they are affected whether they are members of the American Railway Association or not.

The Per Diem Rules are clearly discriminatory and unlawful because they are a combine between one class of carriers, parties to a mandatory Car Service and Per Diem Rules Agreement, to enforce harsh and inequitable rules and regulations on other classes of carriers not party to such Agreement, without their consent, and against their wishes, and for the purpose of coercion.

Per Diem Rule 6 (b) compels Subscribers to a mandatory agreement, to pay to *car owners* who are a party to the combine a rate of $1.00 per car per day, and to pay to other car owners, which as Non-Subscribers, are not parties to the combine, another and different rate, i.e., mileage, equivalent to an estimated average of only about 30 cents per day.

Per Diem Rule 6 (b) denies switching reclaim to one class of roads generally known as Non-Subscribers, while granting it to another class of roads generally known as Subscriber roads, on the sole ground that the former are not parties to the Agreement of the combine, although they affirm and themselves prove that switching rates do not include anything for car hire cost, and that it is not practicable to increase the switching rates to cover such cost.

Per Diem Rule 6 (b) originated as a "fighting rule" and has continued and still serves, and is intended to serve, as an instrument of powerful coercion both (1) to hold present members and also (2) to force outsiders to join the Subscribers' union in which they have no voting rights and must be governed by whatever conditions the minority of large Subscribers may see fit to impose.

The elaborate system of car accounting and reporting between large Subscriber roads under the Per Diem system, necessitating the employment of specialists and a large corps of clerks, is unwarrantably complicated, cumbersome, burdensome, and disproportionately expensive for short lines, especially for those Class III roads which are car users only.

The brief for the American Railway Association takes the position that the present code of per diem rules represents the best judgment of the best qualified railroad transportation men in the country and should be approved for universal application between all common carrier railroads in the United States. "The rules grew out of necessity; have been, since 1902, in a constant state of improvement, and have reached their present form as the result of 26 years of practical operation and experience," the brief says. "While not now perfect, they still provide the best known method of car-hire settlement between common carriers. It should be observed that the rules are not attacked as a whole. On the contrary every interest has conceded their propriety as between subscribers. And the only rules attacked by non-subscribers are those which require the non-subscriber to live up to the obligations imposed upon subscribers, not only by the rules but by the law. Only those rules which require non-subscribers to assume the obligation of furnishing their share of equipment, through purchase or rental, have been criticized. In the final analysis, the only motive of the criticism has been a desire to escape paying car hire, while conceding the right of the owner to receive it. Every rule and every amendment to a rule has been enacted to cure a defect which had been developed. The condemnation of any rule would mean a return to the conditions which caused its enactment. In this situation the rules should be approved.

"The basis of car-hire settlement required in the so-called Birmingham Southern case should be discontinued. This basis was required as an experiment, designed to produce the result sought. It did not produce the result sought. On the contrary, it has been a failure, and has produced bad results.

"The various requests made by the American Short Line Railroad Association and individual short lines should be denied. Particularly should the requests for the abrogation of Rule 6 (b), the granting of reclaim on line-haul traffic, the granting of reclaim and payment of per diem to non-subscribers and the granting of any free time, be denied, since they constitute the principal media through which the short lines hope to secure the use of foreign equipment without charge."

RANCHERS AND MINERS located in Boulder, Clear Creek, Gilpin, Jefferson, Lake Park and Summit counties in Colorado have protested the proposed plans of the Denver water board for the construction of the Two Forks reservoir, involving the abandonment of the narrow-gage line of the Colorado & Southern between Watertown, Colo., and Buffalo, 22 miles. If this portion of the line should be abandoned, they state, it would be necessary to ship via Leadville, Colo., and the Denver & Rio Grande Western. It was said that if the line were to be closed, the entire South Park district would be abandoned for lack of adequate transportation.

Master Painters Convention

A REGISTRATION of approximately 350 members and guests marked the seventh annual meeting of the Equipment Painting Section, Mechanical Division, American Railway Association, which was held at the Windsor Hotel, Montreal, Canada, September 11 to 13, 1928. This convention is also the 58th anniversary of the organization of the former Master Car and Locomotive Painters' Association, which was founded in Boston, Mass., in 1870.

On the opening day an address was made by G. E. Smart, chief of car equipment, Canadian National, and an individual paper on the subject of "Finishes" was presented by Dr. Paul S. Kennedy, Murphy Varnish Company, Newark, N. J. In addition the report of the committee on Shop Construction and Equipment was presented. At the later sessions the following committee reports were presented and discussed: Tests; Maintenance and Care of Paint and Varnish at Terminals; Ornamentation of Cars and Locomotives; Equipment Painting Practices, and New Developments in Equipment Painting with Economies Involved.

Chairman L. B. Jenson, in his opening address, dwelt upon the importance of the annual meetings of the section. He said that the members are united in research for the promotion of all the things that result in greater efficiency, and also the necessary study of new developments required to meet the ever-arising problems in equipment painting. He pointed out that many painting material tests and studies have recently been made.

Mr. Smart, in his address, paid tribute to the work of the Equipment Painting Section, mentioning particularly the care that has been taken in preparing specifications for the painting of new equipment in order properly to protect those parts of the cars which are concealed and are difficult of access. Continuing his remarks he said that the railways have made great progress in the construction and maintenance of equipment and every consideration is given to the provision for maximum strength and safety. Everything practical has been done to provide additional comforts so that railroad travel may be made as pleasant as possible, while at the same time the proper consideration has been given to the question of cost. At the present time the factor of interior decoration is being accorded the consideration that its importance warrants. He said that he did not believe anyone would care to witness the return of the old-fashioned gaudy decorations of past years, but that we have gone to the other extreme in being too plain in the interior painting of passenger cars. Mr. Smart mentions that the lacquer method of finishing is being tried out on Canadian roads; that so far the results have been satisfactory, and while there may be great possibilities under certain conditions and services, he was of the opinion that the railroads will not wholly adopt this system until they have assured themselves that it will give as good or better service under all conditions as the varnish finish in use up to the present time.

In presenting his paper on "Finishes" Dr. Kennedy remarked that never before in the history of the finishing industry—with both supplier and user—has there been such confusion; such wide differences of opinion and such strong and radical prejudices. Both the manufacturer and the user, through many years, have acquired habits of conservatism which have been rudely upset by the swamping of the market with new types of materials for some of which, unfortunately, extravagant and exaggerated claims have been made. He said that it is little wonder that we should have reversals of opinion, and that some should have become ex-

tremely skeptical. In view of the determined and conscientious effort to develop improved methods, accomplishment seems positively certain. Dr. Kennedy dealt with the entire subject of finishes in an extremely frank manner and pointed out early in his paper that varnishes and lacquers are both finishing materials; both have their place and neither should suffer by criticism of the other. Both the maker and the user are striving for a better finish, regardless of what may ultimately produce it and that the means to the end are incidental.

He traced the development of finishing materials and explained clearly the factors that have necessitated constant changes in constituents and the ultimate product. In summing up his paper he said that the ideal finish of the future can be simply described to meet three specifications:

First—It must combat the ultra-violet rays of sunlight which are the enemy of certain colors. The ideal finish must produce a film to stop these rays, or if it does not stop them, a film in which these rays will dissipate with no chemical reaction of destruction.

Second—The ideal finish must be fast in its performance. Maximum speed, without sacrifice of durability, is obviously to be desired.

Third—It must be reasonably safe. It should contain no ingredients which are dangerous to health nor hazardous under normal working conditions.

Of what or how the ideal finish will be secured is a matter of conjecture. It may have nitrocellulose in it or it may be the result of synthetic developments with some or all of the materials we now commonly employ in varnish. It may be a combination of nitrocellulose and varnish ingredients. It may be composed entirely of some new synthetic substance yet to be discovered. It may be a coating produced by a chemical reaction which will occur during evaporation and cause two or more ingredients, which remain inactive while in solution, to combine chemically, and harden to an entirely different product on exposure to the air. It may be two liquids which will be applied one after the other, to effect a combination, or it may be a liquid which will contain no thinner, but after being applied will require exposure to some gas or vapor to harden it properly. None of these suppositions is beyond the reasonable conception of our imagination, and we are surely going to have something of the nature mentioned at some time in the future. In order to accomplish suitable advancement, the finish manufacturers have a right to expect the co-operation of such an influential organization as the Equipment Painting Section, which can render invaluable assistance in a practical way. In concluding, Dr. Kennedy, speaking in behalf of the industry asked the members to keep an open mind for the finish of the future; to co-operate in the steps necessary to its accomplishment; and to remember that the objective is not for a varnish or a lacquer alone but for the best possible finishing material. He said that the manufacturers are in business to sell a finish and the railroads to use it; that the makers are not interested in what it is made of, providing it can be produced at a profit by them and used at a profit by the railroads.

The following officers were elected to serve for the ensuing year: Chairman, D. C. Sherwood, foreman painter, New York Central, West Albany, N. Y.; first vice chairman, Marceau Thierry, foreman painter, Norfolk & Western, Roanoke, Va.; second vice-chairman, F. B. Davenport, foreman painter, Pennsylvania, Columbus, Ohio.

The section voted to hold the 1929 meeting at Kansas City.

Looking Backward

Fifty Years Ago

The report of the president of the Pennsylvania for 1877 which includes the report of the general manager, shows that the average revenue freight-train load on the Pennsylvania Railroad division, including the main line between Philadelphia and Pittsburgh, increased from 109 tons in 1869 to 145 tons in 1877.—*Railroad Gazette,* September 13, 1878.

The superintendent of the Bell's Gap [now part of the Pennsylvania] makes the claim that a narrow-gage road can be built successfully where a broad gage cannot, that it can be built for from one-half to two-thirds the cost of the broad gage and that it has equal capacity with the broad gage at about two-thirds the cost of operation.—*Railroad Gazette,* September 13, 1878.

The new air line and tide level branch of the San Pablo & Tulare, which is leased to the Central Pacific [now part of the Southern Pacific], between Oakland, Cal., and Tracey, via Martinez and Antioch, was opened to traffic on September 3. Although the new route is about 10 miles longer than the old line via Niles, a number of heavy grades have been avoided and it is expected that through trains will save an hour of time by using this route.—*Railway Age,* September 12, 1878.

The Western Executive committee met at Chicago on September 5 and took the initial steps toward the formation of an eastbound pool (not including live stock) by the selection of six points, Chicago, St. Louis, Peoria, Indianapolis, Louisville and Cincinnati, as pooled points. The roads centering at these points are to agree among themselves on the percentages of traffic to which they shall be entitled, taking the tonnage of the last five years as the basis.—*Railway Age,* September 12, 1878.

Twenty-Five Years Ago

The city council of New Orleans, La., has granted the Louisiana Railway & Navigation Company an entrance into that city. The main line will be extended from its present terminus at Mansura, La., to New Orleans via Baton Rouge.—*Railroad Gazette,* September 18, 1903.

The railroad commissioner of Michigan has ordered the Michigan Central to reduce the passenger fare between Grand Rapids, Mich., and Jackson to 2½ cents per mile under a law which provides that all railroads whose passenger trains shall earn in excess of $2,000 per mile of road operated shall carry passengers at that rate.—*Railway Age,* September 18, 1903.

The Chicago, Cincinnati & Louisville [now part of the Chesapeake & Ohio] has completed arrangements for the inauguration of train service between Cincinnati, Ohio, and Chicago on October 1. The road uses its own tracks between Cincinnati and Hammond, Ind., and the Chicago Terminal Transfer from that point to Chicago.—*Railway and Engineering Review,* September 12, 1903.

Ten Years Ago

J. H. Dyer, assistant general manager of the Northern district of the Southern Pacific, with headquarters at Portland, Ore., has been promoted to general manager in charge of the Pacific system, with headquarters at San Francisco, Cal.—*Railway Age,* September 13, 1918.

In a report to the President giving an account of the work of the Railroad Adminstration for the first seven months of its existence, Director-General McAdoo states that a net saving of $4,614,889 has been effected in the salaries of railroad officers receiving more than $5,000 per year. He also points out that law department expenses have been reduced $1,500,000 annually and that the closing of unnecessary freight and passenger offices and the curtailment of advertising have effected an estimated saving of $23,566,633 annually.—*Railway Age,* September 13, 1918.

Communications and Books

Railroad Policy and Public Relations Work

BALTIMORE, MD.

TO THE EDITOR:

I have read in the *Railway Age* of August 25 the editorial, "Railroad Policy and Public Relations Work," and cannot refrain from congratulating you and the *Railway Age* upon this very forceful statement of what appears to me to be a most desirable, if not absolutely necessary, course on the part of the railway managements, if a proper relationship between the railroads, on the one hand and the general public, on the other, is to be maintained.

As Chairman of the Central Committee on Public Relations of the Baltimore & Ohio Company the thought which you so clearly express has been in my mind for some time.

Just this evening I am to address a group of farmers and fruit growers in one of the largest apple belts in the eastern part of the United States and, in turning over in my mind the matters which I will discuss, I am constantly confronted with the recollection that on previous occasions of this character I have had the question addressed to me, "Well, what should be done about it? What do the railroads want?" Inasmuch as no comprehensive plan has been outlined I can only generalize by saying, "Fair treatment. Maintenance of rates which will allow them to earn a fair return." Then it is said, "Well, you admit the attitude of the public toward the railroads is better than ever before and the prices of railroad stocks and bonds are higher than ever before, so what can you complain about?" Of course, I try to explain that net earnings are maintained by economies in operation and maintenance which have reached the limit and which, if pursued further, will eventually impair railroad facilities and make it impossible for the carriers to maintain their present efficient transportation service.

So, in view of my personal experience, I fully agree with the final sentence in your editorial,—"the purpose of railway public relations work should be to 'sell' the public a sound railroad policy but the first essential to selling such a policy is to formulate it."

JOHN J. CORNWELL,
General Counsel, Baltimore & Ohio Railroad

[The *Railway Age* especially values the above expression from Mr. Cornwell, because he has been successful in politics as well as in the law and railroading, having formerly been governor of West Virginia. The railways could learn a good deal from public men about how to create and use public sentiment so that it would be not only friendly but helpful.

—EDITOR.

Sleepers or Wakers—Which?

TO THE EDITOR:

You are doubtless aware of the many inducements held out by the attractive folders and pamphlets issued by the various railroads to the public to travel by *sleeping* cars "to save time and to arrive *refreshed* at one's destination." I am compelled by a very real experience to pronounce these inducements as bunk, as irony, as farcial.

This summer I traveled to Portland, Ore., Seattle, Wash., and Vancouver in the West: Toronto and Montreal and North Sydney, N. S., in the East. With a single exception there was not one night in which more than fragments of sleep could be obtained, and one had to do his best to make up during the day, sleep lost at night—sleep lost, not by any fault of his own, but because the railroad transporting him had put on the train an engine which was of inadequate power and could start the train only by taking up slack and so ensuring the wakefulness of the poor passenger who had paid good money for the privilege of "traveling while he slept."

Reference to the folders tells me just how the respective trains are made up—so many Pullmans, so many coaches, express and mail cars, etc. The mechanical department of the railroad transporting me knows the weight of these cars and the capacity of the engine necessary to haul this train as it should be hauled to afford its passengers the sleep they pay for, and there must be a remedy for this abuse of the confidence of the traveling public.

Either the mechanical department has underestimated the power of the engine necessary or the transportation department has stuck on "just one more car" providing sufficient additional weight to break the camel's back, and spoil the performance of the engine, the service rendered and the temper of the passengers.

Sometimes, of course, the president of the road wants to go somewhere in his private car—the railroad's business requires him to go, but if his car adds some sixty to seventy tons to the weight of the standard train a heavier engine or an additional engine should be provided for the train so that its performance will not be spoiled and would-be sleepers will not be robbed of their sleep. This is only common sense for the railroad and common justice for its patrons.

The exception to the wretchedly outrageous service rendered was on a road having some real engines of the four-eight-two type, which were large enough to start smoothly and gently the fourteen cars attached to them, and I can assure you that this night run of nearly five hundred miles was a real joy, eliciting the favorable comment of the passengers experiencing so great a luxury and affording the writer the only night of real rest on a train in all the eight thousand miles traveled. On one night defective brakes bunched the train and this just as effectively prevented sleep as taking up the slack.

Is it more necessary to remedy the unsatisfactory service mentioned than to call it to the attention of those responsible for it by means of your journal? I hope not.

A SUFFERING TRAVELER.

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

Incredible Siberia, by Junius B. Wood. Complete indifference to times of arrival and the digestion of an ostrich appear to be important for anyone electing to travel on the roads that used to make up the Trans-Siberian, as did the author of this book. 261 p. Pub. by Dial Press, New York City. $4.

One Hundred Years of American Railroading, by John W. Starr, Jr. High lights of our railroad history by the author of "Lincoln and the Railroads" mentioned in an earlier Booklist. Mr. Starr is a railroad man. Illustrated. 336 p. Pub. by Dodd, Mead & Co., New York City. $3.50.

Periodical Articles

Railway Electrification in Europe. No. 5.—The Midi Railway of France. Illustrated. Modern Transport, September 1, 1928, p. 3-4.

The Future City, by Albert W. Atwood. Traffic and transportation, including of course freight services, and problems involving them that face city planners. Saturday Evening Post, September 8, 1928, p. 10-11, 145-150.

"No Foxes Seen," by Sir George Wilkins. Meteorological and other information gathered on recent Trans-North-Polar-Flight from Point Barrow, Alaska, to Green's Bay, Spitzbergen. Illustrations and maps. World's Work, August 1928, p. 360-373.

Odds and Ends of Railroading

Walter A. Johns, formerly a clerk in the division engineer's office of the Pennsylvania at Oil City, Pa., rates a salute now. He graduated from West Point in June and is now a lieutenant of cavalry.

The name of Huntington, the railway builder, continues to be associated with San Francisco. This time it is Dr. A. M. Huntington of New York, son of the late Collis P. Huntington. Dr. Huntington has just donated $100,000 to the San Francisco Palace of the Legion of Honor.

The Oracle Blows Another Tube

This is Arthur Brisbane's latest contribution to the gaiety of nations:

"The Canadian Pacific, the stock of which went climbing yesterday, is operated in a country with a population smaller than that within 40 miles of New York's city hall. What makes Wall street pay such high prices for a Canadian railroad? How do you explain the Canadian government's ability to operate Canada's national railroads, national telegraph and telephone system all with a profit?"

The Watch-Cry of the Commuters

If it be true that almost every group of humans has its catch phrase—a few words by which all the world identifies it—then surely the slogan that best fits the great army of commuters is "Here she comes!" For every morning at a thousand suburban railroad stations this cry is raised. It is the cry from the minaret, the commuter's matutinal orison. It is as much an institution as the arrival of morning itself, its unfailing daily recurrence is like the motif in a Wagnerian opera.—New York Times.

A Faithful Employee

Passengers alighting from Louisville & Nashville trains at Russellville, Ky., are sure to encounter Jack, an unofficial railway employee. Two years ago, Jack, a hound-dog of no particular pedigree or discernible breed, walked into the station and assumed the job of greeting passengers. Since that time he has been on duty 24 hours a day, never leaving the station grounds except to visit a nearby lunch-wagon for a hand-out. When a passenger train arrives, Jack is always on the job, supervising the loading of mail and baggage and welcoming those who arrive on the train.

Another Inspired Reporter

The ambition of a high school freshman to become a newspaper reporter caused W. M. Beiter, captain of police, Elmira division, Pennsylvania, a peck of trouble recently. This youth sent a list of personals to the daily paper of a neighboring town. To make his "stuff" interesting he included a story to the effect that two boys had been discovered by a fisherman placing an obstruction on the railroad track, ahead of passenger train 8420, with the intention of wrecking it and that the fisherman compelled the boys to remove the obstruction, thus preventing a wreck. Although no name was signed to these news items, the paper printed them. Captain Beiter at once began an investigation, but could find no evidence of an attempted wreck. Calling at the newspaper office, he was given the unsigned letter. Armed with this, he did a little skilful detective work and soon located the author of the letter, who admitted that the whole affair was purely fiction. Captain Beiter then gave this youth some good advice on the subject of writing for newspapers, probably in a more impressive manner than most of the lessons the boy had learned in school.

An Unofficial Race

Three speedy power cruisers chose to try conclusions with the Pine Tree Limited of the Boston & Maine recently. Their time from the North Channel entrance of Boston Harbor to Portland Head Light, while the fastest water time yet made between these two points, was 24 minutes behind the Pine Tree's running time and 39 minutes behind the time of the Flying Yankee. Their course was 102 miles as against a minimum of 108.5 and a maximum of 114.7 miles for the trains—the rail distances varying according to routes and combinations of routes. Making their run in three hours and four minutes, the power cruisers maintained a speed of 34 miles an hour—very fast for sustained running in open ocean. The sponsors of the motor boat trial announced it as a test against the Pine Tree rather than the Yankee. It was, however, a "race" against time only, as the boats made an early morning start to get the benefit of calmer conditions, although the eastbound Pine Tree is an afternoon train. The boats were piloted by Louis D. Pierce of Providence, R. I., Walter Moreton of Boston, and Howell Sheppard of Winchester, Mass. They had six passengers.

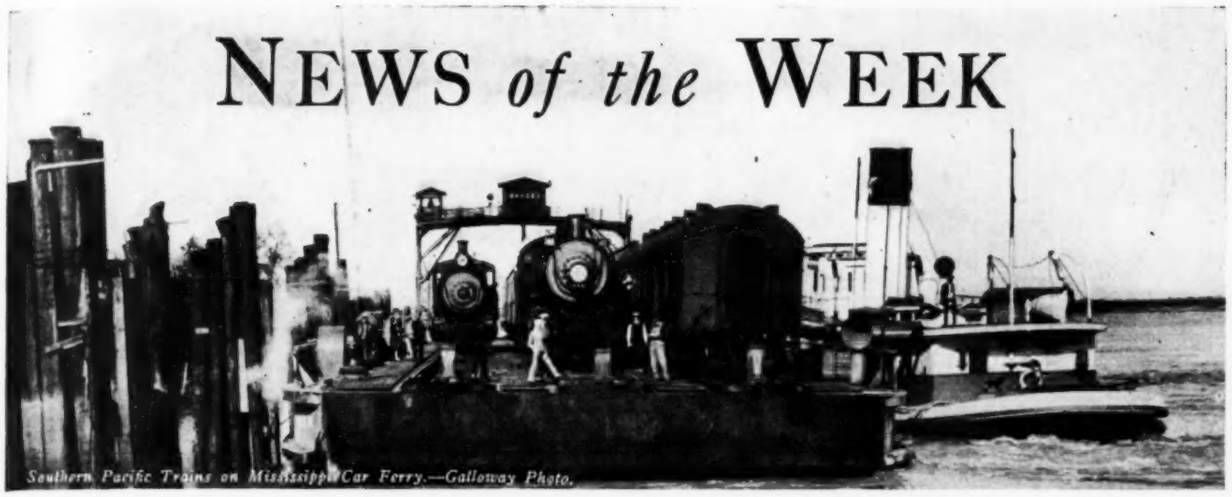
The Railroading Thiehoffs

Twelve men in a family, all of whom have worked all their lives at railroading and eleven of whom now are connected with the Chicago, Burlington & Quincy, held a reunion at Monroe City, Mo., on June 25, at the home of S. B. Thiehoff. William F. Thiehoff, Chicago, who has been in the railroad business 45 years, is the dean of the group in years of service and rank. He is general manager of the Burlington Lines east of the Missouri river. Included with Mr. Thiehoff in this family of railroad men are six brothers, his son, two brothers-in-law and two nephews, all connected with the Burlington. The six brothers are: Samuel B. Thiehoff, agent-operator, Monroe City, Mo.; A. A. Thiehoff, chief dispatcher, Omaha, Nebr.; J. M. Thiehoff, engineman, Brookfield, Mo.; P. Y. Thiehoff, general yardmaster, St. Louis; S. C. Thiehoff, passenger conductor, Fort Madison, Ia. J. R. Thiehoff, Portland, Ore., another brother, is a passenger conductor for the Spokane, Portland & Seattle. J. E. Thiehoff, son of William F. Thiehoff, is trainmaster on the Omaha division of the Burlington. E. L. Howe of Quincy, Ill., Burlington baggage master between Quincy and Kansas City, and F. R. Shutts, division accountant, Wymore, Nebr., are brothers-in-law. D. H. Howe, workman in the Quincy yards, and Joseph Thiehoff, a clerk in the Chicago offices, are nephews.

Man-Power and Transportation

Picturing the enormous development of mechanical energy, an interesting contrast is drawn between the present and the primitive in transportation; an estimate published in the press being to the effect that if the freight carried by the railroads were transported by man power, the work would require 1,200,000,000 men. As a mathematical proposition, this estimate is seen to be far below the actual. About 32,000,000, or 27 per cent, of the people in the United States are males 19 to 65 years old. If they were all able-bodied, could each carry a 100-pound load 15 miles a day, and had no other work to do, they could produce daily transportation amounting to three-quarters of one ton-mile per man, or a total of 24,000,000 ton-miles. At this rate the average daily job done by the Burlington would take more than 51,000,000 men. During 1927 the freight service performed by all Class I railroads in the country averaged approximately 1,293,000,000 ton-miles per day, and on the same basis this load would require the labor of 1,724,000,000 porters. This assumes employment of practically all the adult males in a population of 6,400,000,000 to carry the freight now hauled by our railroads—to say nothing of other agencies of transportation. Since about one-eighth of our people are concerned directly or indirectly in railroad work, it appears from the use of this ratio that something like eight times the present population of the globe would be needed to replace steam transport with man-power in the United States alone.—C. B. & Q. News Item.

NEWS *of the* WEEK



Southern Pacific Trains on Mississippi Car Ferry.—Galloway Photo.

THE DEPARTMENT of personnel and public relations of the Chicago, Rock Island & Pacific, has prepared and is distributing among employees, a booklet explaining the company's policies, the advantages of railway service and the opportunities presented in it and other factors concerning their work.

THE NEW YORK RAILROAD CLUB will hold its next meeting at the United Engineering Societies Building, 29 West 39th street, New York City, on Friday evening, September 21. W. A. Austin, consulting engineer of the Baldwin Locomotive Works, will present a paper on the Caprotti poppet gear, illustrated by motion pictures and lantern slides.

GOLD BUTTONS for 13 employees of the Long Island who have been in the service 50 years, were presented to these employees by the officers of the road at a luncheon to which they invited the veterans at Hotel Pennsylvania, New York City, on September 12. Five of these men are still on duty and eight are on the pension roll.

Milner Goes to Colombia

The Minister of Public Works of Colombia, South America, has announced that a contract has been made with B. B. Milner for taking charge of the reorganization of the railways of that country. It is understood that Mr. Milner will leave for South America about the middle or end of October.

Conductor Buck Subdues Robber

A bandit who robbed the express car of an eastbound New York Central train of $3,000 near Blissfield, Mich., on June 22, was captured on another train of the same road between Cleveland and Toledo on September 2, when he attempted to rob the conductor after he had refused to present a ticket. When ordered to the rear of the coach at the point of a revolver, C. L. Buck, conductor on the train, took the gun and, with the help of passengers, overpowered the bandit. After being arrested, the bandit admitted robbing the express messenger near Blissfield.

Moffat Tunnel Costs

Expenditures for the construction of the Moffat tunnel in Colorado have totaled $17,813,973 according to a statement made public by the Tunnel Commission at Denver on September 1. Total receipts of the commission up to July 7 were $18,487,383 and bonds with a face value of $15,470,000 have been issued at various times since July 1, 1923. At that time the cost of constructing the tunnel was estimated at $6,720,000.

The chief items of expense have been: Labor, supplies and expenses of tunnel construction, $9,550,480; administration, $403,378; engineering, $476,415; camp, $631,585; plant, $1,046,219; boarding houses $867,977; commissary, $422,089; insurance, $384,093; contractor's fee, $140,000; ventilation plant, $254,140.

Two-Station Plan for New Orleans

Acting on the advice of its engineering adviser, the Louisiana Public Service Commission will accept the two-station plan of passenger terminal facilities for New Orleans, according to an announcement by the chairman of the commission in that city on September 5. Under this arrangement the Illinois Central will now be allowed to put up a passenger station on Rampart street while the commission expects to reach an agreement for the construction of a second station to be used by the Louisville & Nashville and the Southern. Including the elimination of grade crossings the cost of construction of the Illinois Central passenger terminal project is estimated at $8,000,000.

The terminal engineer employed by the commission reported that the two-station plan, as distinguished from the union station plan, will require the purchase of less real estate, less abandonment of present facilities, and less new construction; and will avoid certain congestion that might arise on the New Orleans Public Belt through the use of certain portions of its line by passenger trains.

Maine Railroads Win Tax Fight

Joint effort in a campaign of publicity on the part of the 14 railroads operating in Maine has accomplished revision of the state's method of taxation for railroads. On September 10 the people of the state voted at the rate of three to one to reduce the taxes on the railroads. In addition to local taxes on land and buildings, exclusive of their rights-of-way, the railroads have been paying to the state an excise tax for the privilege of doing business amounting to 5½ per cent on their gross transportation receipts. Since the war the effects of this method of taxation have been burdensome and inequitable, and the railroads have waged a long fight for legislative relief.

The contest has been long-drawn-out and stormy, and finally resulted in the submission to the voters of the state by a referendum of a new method of computing the state excise tax, known as the "gross-net" plan, which grants practically all the railroads operating in the state a reduction in their taxes. An article giving details of the campaign for the revision of this tax appeared in last week's *Railway Age*.

Hearing Opens on Proposed Union Pacific Line in Idaho

The hearing before Commissioner Frank McManamy and Examiner John L. Rogers of the Interstate Commerce Commission on the petition of the Idaho Public Utilities Commission, the Public Service Commission of Oregon, the Washington Department of Public Works and the cities of Clarkston, Wash., and Lewiston, Idaho, which would require the Union Pacific to build an extension along the Snake river between Homestead, Ore., and Lewiston, was opened at Lewiston on August 27. The total cost of construction of the 125-mile line was estimated by C. C. Van Arsdol, consulting engineer for the commissions, as $16,933,822, while A. C. Spencer, general solicitor of the road,

(*Continued on Page 516*)

Revenues and Expenses of Railways

MONTH OF JULY AND SEVEN MONTHS OF CALENDAR YEAR 1928

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1927.
Akron, Canton & Youngstown	July	171	$282,462	$178	$293,784	$63,738	$27,099	$12,228	$70,707	$14,267	$187,768	63.9	$106,016	$93,261	$63,278	$55,133
	7 mos.	171	1,821,736	1,550	1,897,375	365,698	192,552	88,572	519,946	100,472	1,265,808	66.7	631,567	539,050	352,561	301,663
Atchison, Topeka & Santa Fe	July	9,430	14,672,570	3,326,935	19,360,886	3,219,563	3,363,046	402,214	5,173,553	410,504	12,485,485	64.5	6,875,401	5,233,239	5,067,924	3,576,881
	7 mos.	9,427	80,202,716	21,128,221	110,869,649	21,774,881	22,987,307	2,865,518	33,947,228	2,891,894	84,110,790	75.9	26,758,859	18,081,645	17,894,539	21,650,790
Gulf, Colorado & Santa Fe	July	1,944	2,063,470	218,134	2,401,830	320,608	415,986	53,677	712,544	73,812	1,570,159	65.4	831,671	739,390	601,019	715,491
	7 mos.	1,944	12,539,110	1,339,580	14,793,257	2,982,691	3,316,040	397,004	5,095,943	502,614	12,129,274	82.0	2,663,983	2,014,681	1,024,211	2,428,544
Panhandle & Santa Fe	July	1,023	1,338,870	113,931	1,535,075	251,225	222,590	19,110	372,101	35,106	892,123	58.1	642,952	597,776	499,082	374,889
	7 mos.	1,023	5,886,037	744,725	7,154,523	1,938,369	1,549,323	88,474	2,218,250	192,714	5,800,445	81.1	1,354,078	1,096,831	482,076	1,258,718
Atlanta & West Point	July	93	159,437	62,658	250,725	29,950	47,394	12,164	90,836	13,897	198,940	79.3	51,785	39,248	24,822	27,948
	7 mos.	93	1,130,729	409,007	1,761,283	202,447	312,651	86,794	634,901	92,378	1,361,506	77.3	399,777	294,670	186,627	169,631
Western of Alabama	July	133	185,867	63,187	272,437	33,510	47,469	11,935	86,389	14,855	198,344	72.8	74,093	60,302	62,015	58,620
	7 mos.	133	1,309,052	399,352	1,890,352	235,886	348,759	86,212	556,142	101,528	1,355,039	71.7	535,313	399,377	493,545	286,668
Atlanta, Birmingham & Coast	July	639	415,335	32,040	486,255	83,052	90,099	28,219	172,546	19,014	404,197	83.1	82,058	67,044	38,192	—12
	7 mos.	639	2,315,883	190,907	2,793,022	611,986	573,344	203,536	1,124,060	131,423	2,716,982	97.3	76,040	—29,462	—143,150	—86,315
Atlantic Coast Line	July	5,127	3,583,067	816,333	4,754,120	878,048	1,206,599	170,126	1,907,344	169,373	4,366,693	91.9	387,427	36,496	168,525	31,340
	7 mos.	5,109	31,662,883	9,004,909	44,303,459	6,656,958	8,899,630	1,264,954	15,425,026	1,244,557	33,916,444	76.6	10,387,015	6,974,088	6,605,639	8,472,804
Charleston & Western Carolina	July	342	219,029	13,380	239,637	49,173	35,797	7,371	94,206	6,576	194,196	81.0	45,441	23,412	24,705	5,974
	7 mos.	342	1,787,704	88,667	1,942,818	421,247	334,423	51,416	699,826	49,479	1,556,030	80.1	386,788	235,470	216,951	253,094
Baltimore & Ohio	July	5,637	16,400,600	2,175,615	19,911,874	2,210,794	3,776,113	448,265	6,644,953	661,991	13,925,759	69.9	5,986,115	5,024,635	4,848,775	3,687,105
	7 mos.	5,637	108,666,800	13,844,364	131,143,130	16,463,096	27,754,490	3,424,345	47,013,980	4,709,134	100,636,243	76.7	30,506,887	24,211,218	22,561,135	26,242,975
Baltimore & Ohio Chicago Term.	July	87	.....	.....	360,776	39,986	39,061	2,417	165,140	19,584	269,729	74.8	91,047	26,793	120,516	102,397
	7 mos.	87	.....	.....	2,491,586	262,592	290,112	17,342	1,259,222	115,700	1,963,451	78.8	528,135	111,266	736,727	631,393
Staten Island Rapid Transit	July	23	100,840	167,325	289,991	29,843	19,052	1,903	111,050	15,271	177,119	61.1	112,872	92,771	57,186	83,529
	7 mos.	23	755,007	871,998	1,807,111	236,699	141,112	15,182	754,105	115,275	1,262,373	69.9	544,738	401,095	143,380	138,785
Bangor & Aroostook	July	613	326,045	38,380	390,339	107,953	103,140	6,321	115,947	23,247	359,965	92.2	30,374	264	29,087	—24,690
	7 mos.	613	3,830,488	425,806	4,432,673	769,307	775,080	40,019	1,085,944	171,368	2,863,725	64.6	1,568,948	1,211,486	1,295,714	1,348,287
Belt Ry. Co. of Chicago	July	32	.....	.....	677,902	78,910	73,374	3,581	289,469	15,418	460,752	68.0	217,150	166,701	137,982	150,165
	7 mos.	32	.....	.....	4,571,604	439,704	479,804	26,739	2,136,738	82,807	3,165,792	69.2	1,405,812	1,046,041	1,008,581	993,349
Bessemer & Lake Erie	July	224	1,870,807	10,412	1,902,448	114,802	328,144	13,536	370,592	33,256	847,959	44.6	1,054,489	910,274	884,257	468,579
	7 mos.	225	7,784,957	70,203	7,982,622	799,552	2,177,453	102,368	2,044,178	237,203	5,368,208	67.2	2,614,414	2,212,154	2,210,164	1,900,251
Bingham & Garfield	July	33	38,640	40	39,671	8,707	4,994	1,449	8,795	4,160	28,212	71.1	11,459	3,535	20,706	8,146
	7 mos.	33	266,446	40	274,051	61,596	57,154	9,971	71,877	31,265	232,697	84.9	41,354	—10,015	107,144	119,450
Boston & Maine	July	2,112	3,937,831	1,638,708	6,347,604	1,099,462	920,553	97,506	2,217,914	221,066	4,575,858	72.1	1,771,746	1,476,182	1,260,991	1,317,140
	1 mos.	2,112	28,203,214	9,628,648	42,936,224	6,342,816	7,408,065	579,052	16,053,381	1,590,266	32,078,097	74.7	10,858,127	8,782,981	7,387,149	6,838,672
Brooklyn Eastern Dist. Term.	July	9	109,077	.....	113,382	7,619	15,749	671	42,301	7,442	73,782	65.1	39,600	32,032	32,032	21,765
	7 mos.	9	833,972	.....	864,350	66,320	87,366	4,110	309,086	54,470	521,352	60.3	342,998	283,843	283,843	252,682
Buffalo & Susquehanna	July	253	110,020	1,061	119,642	26,754	36,025	1,746	37,589	7,144	109,258	91.3	10,384	8,384	20,092	3,029
	7 mos.	253	839,895	9,096	899,799	188,255	302,038	13,454	288,282	53,037	845,066	93.9	54,733	40,733	121,773	91,285
Buffalo, Rochester & Pittsburgh	July	601	1,234,063	84,985	1,370,265	198,457	324,075	30,134	517,050	44,171	1,115,693	81.4	254,572	204,572	234,903	71,727
	7 mos.	601	8,829,300	533,247	9,681,685	1,061,256	2,443,574	208,853	3,736,826	287,707	7,753,834	80.1	1,927,851	1,657,733	1,702,477	1,019,670
Canadian Pacific Lines in Maine	July	233	74,428	28,842	115,047	30,109	25,962	5,918	57,516	4,073	123,578	107.4	—8,531	—22,531	—32,722	—36,123
	7 mos.	233	1,256,500	212,874	1,566,568	358,088	286,045	39,676	677,269	29,676	1,390,754	88.8	175,814	77,814	—84,269	—92,058
Canadian Pacific Lines in Vermont	July	85	94,518	53,898	170,654	510,471	30,439	1,729	92,140	2,091	636,870	373.2	—466,216	—471,066	—506,443	35,922
	7 mos.	85	748,628	272,366	1,163,577	906,504	265,340	11,960	709,026	13,664	1,906,494	163.8	—742,917	—776,867	—1,014,331	—7,758
Central of Georgia	July	1,911	1,724,142	320,311	2,206,366	263,891	387,323	65,100	860,836	87,499	1,670,210	75.7	536,156	415,237	400,794	386,060
	7 mos.	1,911	11,028,458	2,304,234	14,729,264	1,863,674	2,628,642	498,536	5,696,528	657,362	11,424,801	77.6	3,304,463	2,419,902	2,384,620	2,734,859
Central New Jersey	July	690	3,335,438	991,759	4,619,632	512,485	942,367	71,664	1,783,537	122,583	3,458,975	74.9	1,160,657	685,306	578,895	1,198,044
	7 mos.	690	25,295,561	4,923,969	32,258,591	3,138,710	6,830,251	366,495	12,465,785	936,044	23,908,818	74.1	8,349,773	5,611,421	4,786,339	5,468,643
Central Vermont	July	399	573,457	118,210	768,418	332,854	90,270	19,297	273,915	23,099	741,235	96.5	27,183	10,957	5,295	168,703
	7 mos.	387	2,982,639	368,820	3,771,485	2,489,734	716,579	103,859	1,739,592	155,844	5,207,817	138.1	—1,436,332	—1,532,686	—1,633,968	545,453
Chesapeake & Ohio	July	2,723	8,957,875	625,905	9,982,885	1,474,732	2,081,474	124,999	2,610,381	275,982	6,595,571	66.1	3,387,314	2,767,634	3,030,947	3,095,226
	7 mos.	2,719	62,683,227	4,151,373	69,635,319	10,118,345	16,600,214	911,700	18,947,458	1,943,178	48,723,188	69.9	20,912,131	16,323,292	17,776,424	21,053,364
Chicago & Alton	July	1,028	1,624,246	470,446	2,347,305	318,012	511,059	79,646	896,040	76,365	1,870,620	79.7	476,685	370,876	173,622	96,720
	7 mos.	1,028	11,085,370	3,258,517	15,918,126	1,949,659	3,590,928	568,364	6,133,261	556,609	12,875,171	80.9	3,042,955	2,303,011	1,015,291	1,420,068
Chicago & Eastern Illinois	July	945	1,500,463	376,228	2,040,436	261,015	414,185	84,816	758,392	71,128	1,603,031	78.6	437,405	301,640	145,189	151,674
	7 mos.	945	10,547,929	2,096,568	13,784,536	1,761,904	2,961,067	585,158	5,562,068	479,343	11,451,168	83.1	2,333,368	1,490,063	499,818	1,120,968
Chicago & Illinois Midland	July	133	192,473	5,343	201,896	42,225	44,873	16,157	55,653	16,010	174,829	86.6	27,067	20,632	28,413	—107,462
	7 mos.	133	1,366,772	52,161	1,454,561	229,138	302,291	105,190	426,504	111,372	1,173,213	80.7	281,348	233,303	244,776	—306,968
Chicago & Northwestern	July	8,463	9,540,636	2,208,837	13,250,825	2,069,367	2,194,314	275,897	4,702,041	358,884	9,663,064	72.9	3,587,761	2,811,067	2,586,321	1,981,003
	7 mos.	8,463	61,705,326	13,620,066	84,511,959	12,293,165	16,624,912	1,721,334	32,695,774	2,551,763	66,221,897	78.4	18,290,062	12,853,104	11,640,415	10,413,846
Chicago, Burlington & Quincy	July	9,374	9,327,445	2,052,412	12,753,448	2,389,868	2,174,408	343,309	4,299,095	357,446	9,626,434	75.5	3,127,014	2,277,551	1,890,995	1,409,836
	7 mos.	9,376	67,525,746	11,195,470	87,863,029	13,672,845	15,153,099	2,023,550	30,217,266	2,576,886	64,110,721	73.0	23,752,308	17,657,730	15,181,167	13,182,517

Chicago, Burlington & Quincy ..... July 9,374 9,327,445 2,052,412 12,753,448 2,389,868 2,174,408 343,309 4,299,095 357,446 9,626,434 75.5 3,127,014 2,277,551 1,890,995 1,409,836
7 mos. 9,376 67,525,746 11,195,470 87,863,029 13,672,845 15,153,099 2,023,550 30,217,266 2,576,886 64,110,721 73.0 23,752,308 17,657,730 15,181,167 13,182,517

Revenues and Expenses of Railways

MONTH OF JULY AND SEVEN MONTHS OF CALENDAR YEAR 1928—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Maintenance of: Way and structures.	Equipment.	Operating expenses: Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1927.
Chicago Great Western	July	1,495	$1,610,081	$262,127	$2,041,541	$347,589	$356,792	$83,869	$806,103	$57,977	$1,666,203	81.6	$375,338	$290,687	$143,653	$83,549
	7 mos.	1,495	10,901,050	1,702,897	13,711,706	1,839,982	2,567,956	576,248	5,679,089	399,504	11,148,835	81.3	2,562,871	1,989,367	924,280	706,673
Chicago, Indianapolis & Louisville	July	647	1,117,411	156,841	1,414,052	149,084	265,518	40,072	518,329	37,449	1,020,479	72.2	393,573	308,637	191,875	241,710
	7 mos.	647	8,131,008	1,271,979	10,413,166	972,284	2,134,577	281,316	3,885,163	254,509	7,623,494	73.2	2,789,672	2,227,465	1,360,001	1,553,793
Chicago, Milwaukee, St. Paul & Pac.	July	11,251	10,955,411	1,741,606	14,133,128	3,232,846	2,402,878	410,585	4,842,506	355,415	11,333,378	80.2	2,799,750	1,974,629	1,480,641	—82,115
	7 mos.	11,251	74,204,339	10,539,351	93,517,328	15,485,527	17,464,153	2,142,024	33,440,817	2,510,218	71,603,263	76.6	21,914,065	16,291,244	13,250,817	3,725,988
Chicago River & Indiana	July	20	.....	.....	532,972	67,073	47,998	833	197,973	13,835	327,712	61.5	205,260	159,976	247,163	263,421
	7 mos.	20	.....	.....	3,919,452	412,769	434,329	5,562	1,455,719	140,726	2,449,105	62.5	1,470,347	1,186,268	1,857,294	1,824,094
Chicago, Rock Island & Pacific	July	7,565	9,617,828	1,650,454	12,271,459	1,679,895	2,281,568	235,751	4,212,339	344,397	8,748,343	71.3	3,523,116	2,851,746	2,306,911	1,743,229
	7 mos.	7,567	57,085,118	11,070,995	74,770,128	10,160,859	14,906,403	1,673,452	27,410,299	2,353,480	56,496,453	75.6	18,273,675	13,748,589	10,795,527	9,578,520
Chicago, Rock Island & Gulf	July	516	619,694	69,316	740,578	61,008	72,648	21,747	226,577	16,928	402,827	54.4	337,751	315,665	276,417	94,782
	7 mos.	516	3,038,187	455,804	3,813,172	459,200	430,845	143,575	1,412,525	118,635	2,554,774	67.0	1,258,398	1,075,841	865,466	880,389
Chic., St. Paul, Minn. & Omaha	July	1,746	1,530,223	379,379	2,109,222	602,433	403,796	39,924	893,305	75,624	2,021,617	95.8	87,605	—23,927	—104,060	—10,337
	7 mos.	1,746	11,184,405	2,410,609	14,784,082	2,592,722	2,938,725	281,294	6,505,645	535,400	12,903,463	87.3	1,880,619	1,094,405	693,096	1,176,124
Clinchfield Railroad	July	309	505,964	16,459	532,226	65,705	133,041	21,803	116,356	16,709	353,442	66.4	178,784	113,780	207,911	231,176
	7 mos.	309	3,760,637	115,370	3,957,155	450,436	921,095	156,743	861,778	122,874	2,511,261	63.5	1,445,894	940,587	1,514,381	1,962,518
Colorado & Southern	July	1,035	714,155	131,989	930,777	115,556	177,172	14,538	322,507	43,563	680,075	73.1	250,702	186,394	163,102	—65,752
	7 mos.	1,044	5,207,794	663,128	6,443,302	1,232,876	1,367,065	103,619	2,352,151	295,091	5,367,467	83.3	1,075,835	615,642	519,387	230,359
Ft. Worth & Denver City	July	675	834,636	190,313	1,085,628	120,369	139,999	26,091	279,118	37,617	607,551	56.0	478,077	429,885	471,450	187,212
	7 mos.	568	4,650,370	1,095,790	6,202,693	994,418	963,959	149,903	1,889,616	263,616	4,252,725	68.6	1,949,968	1,664,648	1,659,505	1,350,772
Wichita Valley	July	271	90,967	12,401	109,454	34,648	6,447	18	36,295	1,815	78,939	72.1	30,515	23,524	2,217	—18,855
	7 mos.	271	817,421	89,081	958,257	211,887	54,027	146	286,425	12,006	558,988	58.3	399,269	338,991	173,647	204,383
Columbus & Greenville	July	167	98,794	17,018	123,034	48,252	18,130	3,147	45,655	9,692	124,855	101.5	—1,821	—3,023	—13,852	—42,598
	7 mos.	167	761,959	127,289	937,770	294,821	122,316	26,347	341,389	80,235	864,943	92.2	72,827	65,630	—12,727	—61,431
Conemaugh & Black Lick	July	22	103,508	.....	168,419	12,066	23,773	1,005	84,735	3,362	124,941	74.2	43,478	42,478	46,281	26,136
	7 mos.	22	493,569	.....	940,772	89,153	194,515	6,583	561,588	23,811	875,650	93.1	65,122	58,122	65,355	—24,228
Delaware & Hudson	July	881	2,418,758	406,600	3,096,004	358,623	731,302	63,489	1,138,508	162,983	2,477,309	80.0	618,695	268,695	268,921	621,257
	7 mos.	881	18,424,130	1,923,098	22,040,618	2,772,366	5,321,406	378,242	8,244,748	1,136,666	17,955,694	81.5	4,084,924	2,943,953	2,896,992	3,050,281
Delaware, Lackawanna & Western	July	998	4,208,831	1,151,108	6,154,309	728,293	1,090,175	145,400	2,458,024	179,925	4,656,283	75.7	1,498,026	1,128,636	1,160,950	1,523,004
	7 mos.	998	33,124,217	6,813,333	45,337,604	4,997,301	7,943,650	974,467	18,306,055	1,277,226	33,862,449	74.7	11,475,155	7,888,235	8,104,425	9,068,005
Denver & Rio Grande Western	July	2,562	1,843,852	473,779	2,579,268	570,601	507,753	64,279	769,440	89,191	2,045,588	79.3	533,680	342,705	434,211	435,775
	7 mos.	2,554	13,768,273	2,063,073	17,180,457	3,618,568	3,561,956	410,245	5,189,789	611,045	13,579,063	79.0	3,601,394	2,299,694	2,794,349	2,711,755
Denver & Salt Lake	July	232	249,302	21,400	286,582	93,001	65,664	1,723	45,217	20,029	222,008	77.5	64,574	54,571	68,064	—26,662
	7 mos.	237	1,832,356	166,650	2,101,711	447,298	541,012	13,323	402,564	74,018	1,470,346	62.4	631,365	573,332	625,217	36,463
Detroit & Mackinac	July	300	127,964	12,519	153,281	54,445	25,541	1,559	44,105	5,657	125,732	82.0	27,549	17,027	21,079	33,183
	7 mos.	300	755,479	84,923	911,174	251,021	176,357	13,645	304,014	39,688	768,131	84.3	143,043	64,389	90,530	145,950
Detroit & Toledo Shore Line	July	50	326,595	.....	331,310	47,420	32,502	10,377	90,220	10,112	190,631	57.5	140,679	108,912	41,490	51,704
	7 mos.	50	2,744,451	.....	2,777,522	290,112	248,194	38,408	712,654	63,278	1,352,646	48.7	1,424,876	1,208,513	667,511	716,916
Detroit Terminal	July	19	.....	.....	201,150	20,292	16,458	.....	82,687	3,841	123,278	61.3	77,871	56,588	57,773	40,257
	7 mos.	19	.....	.....	1,279,393	119,276	100,288	30	560,874	26,400	806,868	63.1	472,524	342,370	352,853	329,749
Detroit, Toledo & Ironton	July	495	817,482	3,931	834,712	119,870	149,149	13,316	245,271	27,576	549,237	65.8	285,475	225,688	155,225	—44,044
	7 mos.	495	5,438,813	25,411	5,559,977	770,758	1,059,288	88,566	1,774,772	199,922	3,882,165	69.8	1,677,812	1,308,282	872,649	519,689
Duluth & Iron Range	July	275	907,314	5,004	1,032,362	112,760	109,459	1,730	193,978	19,855	437,782	42.4	594,580	530,220	536,560	472,929
	7 mos.	275	2,789,993	32,172	3,214,001	649,383	749,072	12,095	924,606	145,030	2,480,089	77.2	733,912	483,275	494,212	649,496
Duluth, Missabe & Northern	July	308	2,479,543	4,100	2,826,929	170,803	188,708	2,741	366,042	22,338	750,595	26.6	2,076,334	1,847,523	1,844,753	1,587,614
	7 mos.	307	7,007,553	33,616	8,002,853	956,332	1,196,907	21,095	1,573,712	156,108	3,904,099	48.8	4,098,754	3,083,701	3,063,049	3,130,866
Duluth, Winnipeg & Pacific	July	178	180,644	21,578	212,690	73,548	48,405	5,016	70,650	7,323	208,708	98.1	3,982	—6,671	—2,050	36,282
	7 mos.	178	1,357,867	91,491	1,501,608	294,047	334,985	33,568	517,224	54,517	1,247,049	83.0	254,559	178,039	152,838	197,738
Elgin, Joliet & Eastern	July	460	1,744,084	29	1,920,527	221,137	389,383	15,272	658,739	60,419	1,344,027	70.0	576,500	451,661	295,353	331,803
	7 mos.	460	13,345,370	106	14,688,051	1,414,831	2,936,363	105,408	5,037,084	397,000	9,883,331	67.3	4,804,720	3,971,238	2,798,460	3,271,287
Erie Railroad	July	2,047	6,969.835	1,068,851	8,772,704	1,140,790	2,013,926	174,708	3,497,504	289,894	7,139,553	81.4	1,633,151	1,274.323	1,232,449	1,354,474
	7 mos.	2,047	49,619.980	6,141,239	60,736,891	7,350,166	14,135,203	1,201,708	24,246,169	2,034,293	49,237,182	81.1	11,499,709	8,975,513	8,597,470	7,386,106
Chicago & Erie	July	269	1,091,866	64,690	1,264,676	166,795	137,205	26,221	333,565	38,866	700,949	55.4	563,727	505,166	222,644	46,642
	7 mos.	269	7,398,248	332.256	8,382.324	1,134,388	1,078,869	176,319	2,482,089	282,290	5,148,746	61.4	3,233,578	2,858,176	835.159	195,615
New Jersey & New York	July	45	23,007	108,124	136,033	16,636	24,423	2,132	64,793	3,329	111,311	81.8	24,722	20,819	—13,475	—16,443
	7 mos.	45	202,864	674,446	910,843	122,180	166,966	12,158	491,709	24,583	817,510	89.8	93,333	65,965	—166,627	—176,383
N. Y., Susquehanna & Western	July	134	303,869	50,299	392,367	55,385	53,935	5,729	174,876	11,179	300,996	76.7	91,371	62,015	40,191	26,368
	7 mos.	134	2,207,160	312,701	2,806,484	368,799	424,955	36,873	1,335,694	78,501	2,244,327	80.0	562,157	356,641	166.825	85.896
Evansville, Indianapolis & Terre Haute	July	146	109,820	3,186	118,203	28,265	17,174	2,551	51,367	5,895	105,207	89.0	12,996	8,161	—16,130	37,378
	7 mos.	146	978,985	27,422	1,044,152	169,299	161,915	16,309	405,660	41,906	794,960	76.1	249,192	216,665	3,929	139,642
Florida East Coast	July	855	350,009	198,538	640,276	140,764	125,918	27,981	273,203	46,846	629,921	98.4	10,355	—137,577	—200,307	—242,153
	7 mos.	856	5,258,531	3,259,525	9,613,849	1,278,769	1,323,316	257,174	2,869,715	338,807	6,249,666	65.0	3,364,183	2,313,996	1.751.506	1,264,338

Revenues and Expenses of Railways

MONTH OF JULY AND SEVEN MONTHS OF CALENDAR YEAR 1928—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income	Net ry. operating income, 1927.
Fort Smith & Western	July	249	$94,772	$9,487	$111,581	$25,775	$22,492	$5,812	$42,100	$6,809	$101,979	91.4	$9,602	$4,099	—$8,787	—$1,138
	7 mos.	249	686,619	66,030	799,070	164,968	185,564	41,872	298,140	47,928	732,643	91.7	66,427	39,572	—49,193	—9,683
Galveston Wharf	July	13	.....	.....	161,897	42,043	4,687	5,239	27,523	3,732	95,410	58.9	66,487	41,487	41,513	29,905
	7 mos.	13	.....	.....	1,124,229	314,977	31,687	23,555	188,012	33,210	654,852	58.2	469,377	309,377	310,243	283,182
Georgia Railroad	July	328	378,739	76,942	480,449	53,184	85,668	23,568	191,917	23,796	378,460	78.8	101,989	91,330	106,852	97,384
	7 mos.	328	2,384,817	420,137	3,014,404	323,492	592,761	163,390	1,327,298	163,715	2,569,078	85.2	445,326	379,819	474,186	553,444
Georgia & Florida	July	445	114,835	15,063	136,994	18,736	19,069	9,150	57,366	8,064	112,408	82.1	24,586	15,585	14,735	12,502
	7 mos.	445	754,684	87,794	897,441	132,728	133,607	63,329	366,493	57,846	753,667	84.0	143,774	82,419	93,563	123,925
Grand Trunk Western	July	345	1,521,064	250,430	1,884,468	299,480	362,865	45,622	608,457	65,548	1,391,415	73.8	493,053	401,655	270,809	238,689
	7 mos.	345	10,767,307	1,251,195	12,641,478	1,508,558	2,679,725	303,201	4,344,959	456,324	9,366,712	74.1	3,274,766	2,666,208	1,929,735	1,811,604
Atlantic & St. Lawrence	July	166	169,412	35,389	222,940	65,558	44,553	6,269	101,174	10,520	229,267	102.8	—6,327	—21,227	—71,868	—53,264
	7 mos.	166	1,175,469	205,133	1,518,383	445,226	256,672	41,197	894,331	61,839	1,709,500	112.6	—191,117	—293,488	—746,489	—379,669
Chic., Det. & Canada Gr. Tr. Jct.	July	59	284,447	500	323,925	12,360	15,258	4,811	90,909	3,842	127,180	39.3	196,745	186,395	155,919	120,483
	7 mos.	59	1,987,456	7,092	2,259,571	88,728	112,130	33,552	658,528	28,744	921,653	40.8	1,337,918	1,265,457	1,048,048	825,101
Detroit, Grand Haven & Mil.	July	192	765,509	24,422	845,394	108,365	64,302	13,959	277,483	19,767	483,658	57.2	361,736	352,854	224,393	188,566
	7 mos.	192	4,790,981	177,158	5,341,164	682,010	445,265	95,152	1,941,346	134,753	3,298,270	61.8	2,043,894	1,981,804	1,155,198	1,059,416
Great Northern	July	8,311	7,886,252	1,153,898	10,121,027	1,534,660	1,437,257	249,962	3,177,541	225,995	6,736,798	66.6	3,384,229	2,624,297	2,607,145	2,400,388
	7 mos.	8,223	47,626,313	6,520,624	60,088,510	9,216,156	10,854,878	1,747,848	21,014,889	1,669,739	44,970,856	74.8	15,117,654	10,183,961	10,049,366	9,433,223
Green Bay & Western	July	234	128,118	4,328	141,975	27,479	21,925	5,432	53,364	2,457	110,657	77.9	31,318	21,318	14,637	—3,040
	7 mos.	234	898,164	38,545	985,545	155,934	135,412	36,844	378,474	19,233	725,895	73.7	259,650	201,486	163,934	109,747
Gulf & Ship Island	July	307	162,294	40,207	219,561	58,159	54,051	4,943	101,275	7,719	229,160	104.4	—9,599	—37,019	—53,550	—34,485
	7 mos.	307	1,511,412	275,123	1,948,751	428,052	379,159	36,807	722,984	57,987	1,649,374	84.6	299,377	111,809	356	—306,206
Gulf, Mobile & Northern	July	733	519,035	31,389	575,519	117,299	79,998	32,564	180,012	26,527	436,686	75.88	138,833	111,723	83,019	77,544
	7 mos.	733	3,790,107	212,855	4,175,067	770,214	640,679	224,207	1,303,306	196,645	3,136,849	75.13	1,038,218	832,260	595,218	627,792
Hocking Valley	July	348	1,629,432	60,090	1,892,380	193,344	330,644	16,466	506,889	42,888	1,090,228	57.6	802,152	689,389	547,375	572,571
	7 mos.	348	9,596,730	414,729	10,970,954	1,271,688	2,297,299	117,438	3,244,376	323,459	7,254,101	66.1	3,716,853	2,876,845	2,426,861	3,130,412
Illinois Central	July	5,058	9,628,955	1,662,389	12,036,599	1,700,466	3,119,904	267,178	4,141,434	366,626	9,679,732	80.4	2,356,867	1,624,963	1,639,269	2,092,056
	7 mos.	4,973	67,695,808	12,710,820	87,050,543	10,709,765	20,979,302	1,846,155	31,432,808	2,519,276	68,070,751	78.2	18,979,792	13,346,205	13,416,353	15,083,234
Yazoo & Mississippi Valley	July	1,709	1,511,279	297,970	1,921,735	403,400	401,252	44,650	753,543	64,626	1,673,744	87.1	247,991	82,390	12,941	—22,480
	7 mos.	1,709	11,478,698	1,978,074	14,381,410	2,717,655	2,907,193	319,174	5,712,946	453,365	12,145,518	84.5	2,235,892	1,075,402	576,309	383,055
Illinois Central System	July	6,768	11,151,919	1,964,719	13,974,381	2,103,866	3,525,683	311,828	4,904,022	431,399	11,367,195	81.3	2,607,186	1,704,873	1,662,697	2,076,472
	7 mos.	6,682	79,251,457	14,715,829	101,535,857	13,427,420	23,930,825	2,165,329	37,233,190	2,973,574	80,348,968	79.1	21,186,889	14,360,384	14,011,963	15,502,068
Kansas City, Mexico & Orient	July	272	230,118	8,555	246,801	71,416	44,407	8,498	84,087	9,614	218,022	88.3	28,779	24,695	36,976	27,946
	7 mos.	272	1,665,362	43,375	1,770,802	510,219	339,686	63,372	596,799	72,018	1,581,152	89.3	189,650	161,243	238,545	73,870
Kansas City, Mex. & Orient of Tex.	July	465	400,144	18,300	429,758	95,735	75,321	9,951	113,777	11,117	305,901	71.2	123,857	116,727	66,856	55,942
	7 mos.	465	3,222,121	116,587	3,439,851	1,033,380	583,398	70,336	985,955	85,433	2,758,120	80.1	681,731	631,389	208,468	198,639
Kansas City Southern	July	784	1,292,225	99,489	1,562,826	182,465	256,434	60,530	472,475	78,150	1,050,027	67.2	512,799	430,164	374,201	403,423
	7 mos.	784	8,706,345	593,515	10,419,697	1,210,024	1,789,911	402,952	3,279,535	566,469	7,249,832	69.6	3,169,865	2,404,091	1,951,767	2,344,676
Texarkana & Ft. Smith	July	81	214,273	8,238	240,679	25,872	12,774	6,910	64,725	10,906	119,864	49.8	120,815	108,676	73,098	28,129
	7 mos.	81	1,378,953	52,316	1,561,813	160,192	138,238	47,303	440,799	74,461	868,476	55.6	693,337	608,299	414,663	312,731
Kansas, Oklahoma & Gulf	July	326	245,934	2,803	253,714	89,854	25,702	12,926	69,254	12,997	179,847	70.9	73,867	63,298	47,180	39,363
	7 mos.	326	1,633,364	20,746	1,688,635	506,082	176,064	78,505	463,383	72,551	1,186,592	70.3	502,043	426,662	321,875	44,393
Lake Superior & Ishpeming	July	160	280,905	743	329,759	56,394	24,186	571	59,998	5,519	146,668	44.5	183,091	150,805	146,628	124,603
	7 mos.	160	1,050,848	12,235	1,206,131	255,564	188,072	3,745	320,431	67,803	835,615	69.3	370,516	242,075	212,130	216,299
Lake Terminal	July	13	.....	.....	108,334	8,965	18,778	.....	53,285	1,745	82,773	76.4	25,561	21,236	24,941	—7,167
	7 mos.	13	.....	.....	604,746	108,041	140,864	.....	349,402	13,719	612,026	101.2	—7,280	—35,393	—11,456	—61,409
Lehigh & Hudson River	July	96	188,502	1,902	199,817	28,947	35,449	2,414	78,480	8,846	154,136	77.1	45,681	33,471	16,640	47,423
	7 mos.	96	1,514,389	10,524	1,603,712	166,102	237,616	17,803	591,387	69,052	1,081,960	67.5	521,752	419,963	269,149	354,979
Lehigh & New England	July	216	405,135	1,089	413,342	53,440	77,036	5,100	151,091	16,673	303,339	73.4	110,003	93,053	105,287	64,856
	7 mos.	216	2,959,291	10,689	3,016,516	384,236	704,561	36,974	1,113,030	122,603	2,360,626	78.3	655,890	562,155	559,608	821,067
Lehigh Valley	July	1,364	4,512,809	655,687	5,608,486	721,264	1,096,654	135,420	2,271,528	148,474	4,407,738	78.6	1,200,748	921,907	780,104	472,525
	7 mos.	1,364	32,450,759	4,003,972	39,533,490	4,074,747	8,199,685	954,495	16,646,135	1,031,738	31,132,367	78.7	8,401,123	6,415,194	5,349,548	5,059,713
Louisiana & Arkansas	July	301	272,931	10,425	291,620	35,852	54,631	14,413	78,285	10,454	193,520	66.4	98,100	70,689	60,220	21,056
	7 mos.	301	2,041,862	67,710	2,160,732	323,178	385,464	89,326	574,310	71,197	1,441,111	66.7	719,621	507,269	416,560	155,221
Louisiana Ry. & Nav. Co.	July	338	232,561	13,790	260,668	50,708	32,663	13,021	104,342	11,170	212,393	81.5	48,275	25,258	2,490	12,304
	7 mos.	336	1,760,485	71,531	1,916,547	394,195	240,117	88,939	764,472	75,964	1,547,251	80.7	369,296	206,711	22,760	—219,057
Louisiana Ry. & Nav. Co. of Texas	July	206	84,378	3,787	91,522	4,995	14,734	3,262	38,325	5,680	66,963	73.2	24,559	20,559	9,862	—17,719
	7 mos.	206	536,437	24,346	585,983	174,662	98,204	21,800	274,773	39,339	608,745	103.9	—22,762	—51,433	—143,722	—121,026
Louisville & Nashville	July	5,077	8,785,357	1,518,407	10,878,682	1,812,477	2,504,168	237,771	3,891,357	374,784	8,871,514	81.5	2,007,168	1,390,263	1,461,818	2,030,710
	7 mos.	5,077	63,199,322	10,311,361	78,183,432	12,109,452	18,227,611	1,708,341	27,790,503	2,453,213	62,646,209	80.1	15,537,223	11,439,143	11,433,013	13,018,705
Louisville, Henderson & St. Louis	July	199	178,612	39,068	235,504	43,863	54,968	8,527	85,145	11,970	206,203	87.6	29,301	10,452	6,143	46,054
	7 mos.	199	1,474,344	292,380	1,889,968	378,917	332,842	59,793	725,640	82,750	1,591,523	84.2	298,445	158,361	105,589	444,349

Revenues and Expenses of Railways

MONTH OF JULY AND SEVEN MONTHS OF CALENDAR YEAR 1928—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1927.
Louisiana Ry. & Nav. Co. of Texas	July	206	$84,378	$3,787	$91,522	$174,662	$2,504,168	$1,708,341	$27,790	$85,145	$11,970	82,750	$1,591,523			
	7 mos.	206	536,437	24,346	585,983	1,812,477	18,227,611									
Louisville & Nashville	July	5,077	8,785,357	1,518,407	10,878,682	12,109,452										
	7 mos.	5,077	63,199,322	10,311,361	78,183,432		54,968	8,527	85,145							
Louisville, Henderson & St. Louis	July	199	178,612	39,068	235,504	43,863	332,842	59,793	725,640							
	7 mos.	199	1,474,344	292,380	1,889,968	378,917										
Maine Central	July	1,122	$1,156,111	$340,744	$1,669,662	$273,294	$345,860	$20,018	$630,329	$54,651	$1,331,029	79.7	$338,633	$225,130	$214,113	$145,701
	7 mos.	1,122	8,286,796	1,956,106	11,277,096	1,738,898	2,121,264	110,748	4,437,178	356,859	8,772,754	77.8	2,504,342	1,736,479	1,526,141	1,370,845
Midland Valley	July	364	328,646	14,266	351,514	38,198	29,505	8,812	77,277	12,504	166,206	47.3	185,308	172,170	142,560	66,355
	7 mos.	364	1,875,483	113,681	2,052,093	307,468	245,485	54,826	533,701	89,445	1,224,099	59.7	827,994	717,304	533,970	552,591
Minneapolis & St. Louis	July	1,627	1,046,238	68,944	1,179,718	176,601	235,281	36,437	522,488	43,805	1,014,970	86.0	164,748	103,254	54,784	—35,195
	7 mos.	1,627	6,991,328	523,167	7,952,810	1,335,260	1,681,856	249,881	3,735,697	307,407	7,308,750	91.9	644,060	208,362	—215,458	—609,080
Minn., St. Paul & S. S. Marie	July	4,385	3,196,403	593,178	4,153,217	671,510	710,177	95,222	1,526,479	113,052	3,151,059	75.9	1,002,158	767,938	635,018	792,863
	7 mos.	4,385	21,092,766	2,894,638	25,988,385	3,907,136	5,155,709	562,643	10,185,702	833,023	20,778,047	80.0	5,210,338	3,689,435	2,829,557	2,588,540
Duluth, South Shore & Atlantic	July	573	388,565	58,959	501,260	94,117	68,407	8,285	195,011	12,041	381,146	76.0	120,114	84,114	70,823	36,872
	7 mos.	580	2,336,257	408,675	2,994,247	596,384	480,091	56,477	1,281,482	77,298	2,520,256	84.2	473,991	251,901	132,557	298,039
Spokane-International	July	165	85,792	11,066	104,018	16,624	8,861	3,539	29,826	6,038	65,975	63.4	38,043	32,507	25,185	26,253
	7 mos.	165	527,975	69,812	644,865	107,251	62,321	24,377	218,430	44,826	465,245	72.1	179,620	140,969	94,890	127,943
Mississippi Central	July	161	128,102	8,577	141,480	20,085	22,692	9,264	35,414	8,674	96,129	67.9	45,351	35,655	35,565	25,759
	7 mos.	161	858,848	51,937	942,311	145,616	156,583	65,162	251,208	56,573	675,092	71.6	267,219	209,360	201,150	199,782
Missouri-& North Arkansas	July	364	99,664	11,913	119,262	30,264	16,421	9,227	51,848	8,233	116,159	97.3	3,103	645	—10,500	—11,420
	7 mos.	364	781,743	75,680	914,716	206,156	139,960	67,768	391,156	56,010	860,836	94.1	53,880	35,213	—47,642	20,421
Missouri-Kansas-Texas Lines	July	3,188	4,068,246	574,033	4,963,694	699,487	912,221	115,929	1,424,237	160,020	3,327,789	67.04	1,635,905	1,357,776	1,148,240	827,988
	7 mos.	3,188	23,896,307	3,956,668	30,259,118	4,020,891	5,728,578	806,623	9,522,595	1,146,379	21,379,193	70.65	8,879,925	7,159,656	5,965,316	6,120,367
Missouri Pacific	July	7,461	9,021,020	1,264,291	11,133,333	1,859,525	2,078,965	315,644	3,688,851	403,318	8,347,821	75.0	2,785,512	2,315,302	1,761,659	1,545,835
	7 mos.	7,433	58,505,072	7,921,938	72,298,534	11,554,575	14,062,526	2,062,452	25,741,034	2,639,238	55,997,800	77.5	16,300,734	13,250,401	10,364,215	7,416,842
Gulf Coast Lines	July	1,026	914,711	133,702	1,098,323	216,701	296,702	42,151	820,656	60,471	1,439,239	74.72	277,667	232,092	204,385	60,406
	7 mos.	1,021	7,417,685	972,309	8,866,471	1,553,269	2,623,190	290,341	6,351,260	415,239	11,379,193	71.63	2,515,211	2,176,235	1,649,684	1,207,584
International-Great Northern	July	1,159	1,147,838	183,497	1,446,892	262,467	576,296	33,731	1,172,300	63,803	2,857,162	81.02	274,592	232,124	187,853	37,734
	7 mos.	1,159	8,074,659	1,275,284	10,217,444	1,706,801	4,301,931	247,977	8,433,443	470,432	19,301,847	82.54	1,784,001	1,489,817	921,959	866,609
San Antonio, Uvalde & Gulf	July	318	158,589	17,258	188,105	41,431	29,217	5,490	49,744	7,203	132,412	70.4	55,693	51,813	18,640	—16,967
	7 mos.	318	1,145,876	126,784	1,362,601	273,079	159,779	38,404	381,745	52,053	908,166	66.6	454,435	427,553	216,265	99,258
Texas & Pacific	July	2,014	3,516,126	498,111	4,226,360	670,624	684,604	77,379	1,309,719	112,939	2,857,162	67.6	1,369,198	1,164,477	872,743	330,847
	7 mos.	2,014	23,413,558	3,411,632	28,463,740	4,207,823	4,525,144	549,819	9,235,998	772,857	19,301,847	67.8	9,161,893	7,855,200	5,671,657	2,562,972
Mobile & Ohio	July	1,159	1,173,223	96,377	1,334,929	226,024	224,862	51,864	513,564	46,437	1,061,551	79.5	273,378	191,232	148,835	173,910
	7 mos.	1,160	8,640,366	656,752	9,841,993	1,522,077	1,795,949	393,526	3,726,171	343,318	7,760,229	78.8	2,081,764	1,502,680	1,138,766	1,478,992
Monongahela	July	171	569,071	12,863	586,070	75,000	75,000	1,253	144,614	11,004	304,759	52.0	281,311	258,536	161,512	171,959
	7 mos.	171	3,929,812	112,733	4,074,753	575,000	560,000	7,628	1,060,860	74,410	2,265,496	55.6	1,809,257	1,664,367	998,702	1,355,658
Monongahela Connecting	July	7	.....	.....	.....	180,543	18,809	300	74,510	3,504	127,042	70.4	53,501	43,335	42,508	19,669
	7 mos.	7	.....	.....	5	1,139,448	125,581	2,532	502,288	23,458	868,658	76.2	270,790	218,788	215,124	223,636
Montour	July	56	135,276	5	136,433	24,879	29,919	1,239	28,226	7,520	108,842	79.8	27,591	26,091	54,769	36,621
	7 mos.	56	870,333	27	875,193	130,074	214,799	8,440	205,157	47,682	679,830	77.7	195,363	184,865	365,488	227,624
Nashville, Chattanooga & St. Louis	July	1,259	1,534,168	296,870	1,994,470	254,374	391,690	69,622	665,835	81,985	1,468,383	73.6	526,087	450,859	465,587	308,987
	7 mos.	1,259	9,987,440	2,003,315	13,093,782	1,755,071	2,877,775	588,376	4,668,190	560,304	10,498,800	80.2	2,594,982	2,080,279	2,130,407	2,316,676
Nevada Northern	July	165	78,002	5,820	91,902	13,752	6,309	987	15,053	4,172	40,433	44.0	51,469	38,862	38,805	31,125
	7 mos.	165	488,582	36,574	580,433	90,756	61,266	6,578	101,888	30,735	292,570	50.4	287,863	210,294	212,154	228,637
Newburgh & South Shore	July	6	.....	.....	180,847	17,294	45,664	.....	68,633	5,317	136,908	75.7	43,939	30,265	29,031	27,303
	7 mos.	6	220,396	23,049	1,204,187	116,818	293,647	13,639	467,590	36,491	914,546	75.9	289,641	195 830	210,102	101,493
New Orleans Great Northern	July	276	1,664,774	140,152	251,702	32,734	32,393	93,270	78,186	11,018	168,179	66.8	83 523	67,683	45,468	27,420
	7 mos.	276			1,867,529	265,374	305,161		584,286	78,628	1,328,502	71.1	539,027	420,104	284,930	303,361
New Orleans Terminal	July	20	519	.....	128,778	24,473	7,274	.....	67,707	1,563	101,017	78.4	27,761	16,754	6,350	40,609
	7 mos.	20	10,833	.....	1,006,157	178,960	53,239	520,369	405,803	12,791	650,793	64.7	355,364	278,272	227,858	285,099
New York Central	July	6,906	19,225,152	8,970,537	32,288,479	4,706,559	6,613,680	3,181,128	11,001,308	1,108,661	24,447,275	75.7	7,841,204	5,623,395	5,470,769	5,681,784
	7 mos.	6,906	132,261,333	55,474,330	215,395,611	27,802,344	46,271,654		75,875,321	7,974,030	164,453,111	76.3	50,942,500	35,882,863	34,015,377	36,641,076
Cincinnati Northern	July	244	284,346	5,729	300,614	40,397	65,223	6,873	103,275	10,418	226,186	75.2	74,428	53,701	34,881	131,071
	7 mos.	244	2,240,242	33,227	2,331,000	277,739	481,866	44,501	791,521	76,739	1,676,067	71.9	654,933	499,348	294,831	1,027,228
Cleve., Cinn., Chicago & St. Louis	July	2 396	5,383,821	1,226,385	7,189,975	912,588	1,561,544	169,462	2,689,345	246,702	5,669,593	78.9	1,520,382	1,124,757	868,808	1,544,295
	7 mos.	2,396	37,850,715	8,394,626	50,690,479	5,603,656	10,972,469	1,060,629	19,199,509	1,872,679	39,267,861	77.5	11,422,618	8,572,333	7,183,386	11,972,605
Indiana Harbor Belt	July	130	.....	.....	1,058,559	115,736	367,117	5,093	619,401	26,228	58.5	439,158	368,798	325,504	131,071	
	7 mos.	130	.....	.....	7,135,964	744,849	2,858,319	34,219	4,706,493	185,018	66.0	2,429,471	2,012,062	1,668,874	1,027,228	
Michigan Central	July	1,858	5,171,854	1,868,439	7,772,028	952,527	2,375,542	141,965	5,354,024	195,292	68.9	2,418,004	1,881,964	1,758,059	1,544,295	
	7 mos.	1,858	36,594,791	11,364,319	53,061,185	5,636,418	17,062,722	907,456	36,236,460	1,527,360	68.3	16,824,725	13,264,175	12,635,305	11,972,605	
Pittsburgh & Lake Erie	July	231	2,352,465	211,254	2,646,548	386,159	809,898	28,401	2,113,950	88,801	79.9	532,598	355,409	685,123	869,417	
	7 mos.	231	15,681,330	1,402,055	17,671,333	2,310,501	5,760,500	195,830	14,693,493	593,632	83.1	2,977,840	1,868,760	4,035,014	4,760,550	
New York, Chicago & St. Louis	July	1,690	3,803,283	198,682	4,141,470	666,350	1,468,719	111,166	3,159,700	127,265	76.3	981,770	738,358	541,345	778,274	
	7 mos.	1,690	28,067,944	1,006,219	30,013,997	3,871,935	10,805,515	896,008	22,305,704	999,281	74.3	7,708,293	5,945,166	4,437,099	5,437,601	

Revenues and Expenses of Railways

MONTH OF JULY AND SEVEN MONTHS OF CALENDAR YEAR 1928—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1927.
New York, New Haven & Hartford	July	2,149	$6,259,367	$3,961,268	$11,383,190	$1,649,832	$2,091,317	$115,728	$3,585,658	$321,300	$7,932,295	59.7	$3,430,895	$2,859,854	$2,278,186	$2,277,546
	7 mos.	2,155	42,248,074	26,725,072	77,389,355	11,500,662	14,604,633	674,501	25,735,445	2,212,870	55,938,064	72.3	21,451,271	17,161,180	13,383,786	12,490,366
New York Connecting	July	20	174,410	.....	197,705	20,638	13,683	.....	39,638	2,093	76,052	38.5	121,653	81,653	60,155	82,926
	7 mos.	20	1,352,251	.....	1,560,591	168,400	87,218	.....	300,721	12,156	568,495	36.4	992,096	714,096	536,044	632,506
New York, Ontario & Western	July	569	589,533	591,994	1,394,028	227,124	225,620	18,972	506,888	33,367	1,016,647	72.9	377,381	332,376	264,623	391,374
	7 mos.	569	4,465,682	1,172,921	6,836,807	952,701	1,296,006	135,703	3,175,719	240,453	5,847,457	85.5	989,350	653,593	299,773	347,897
Norfolk & Western	July	2,241	8,218,875	497,176	9,011,451	1,467,441	1,612,262	117,710	2,173,655	259,809	5,640,973	62.6	3,370,478	2,619,681	2,879,885	2,786,624
	7 mos.	2,241	53,074,962	3,302,709	58,512,940	9,115,845	11,309,508	791,767	15,223,579	1,818,484	38,262,908	65.4	20,250,032	14,695,669	16,298,151	19,468,886
Norfolk Southern	July	931	605,094	52,558	700,854	101,726	103,962	26,541	275,811	28,727	532,861	76.0	167,993	112,757	91,950	93,770
	7 mos.	931	4,847,713	281,985	5,450,585	690,292	758,226	195,247	2,009,654	209,112	3,846,384	70.6	1,604,201	1,223,062	1,009,245	1,101,700
Northern Pacific	July	6,709	5,966,320	1,138,277	7,940,233	1,245,384	1,636,331	246,403	2,691,133	256,262	6,208,854	78.2	1,731,379	1,022,374	1,354,904	1,573,685
	7 mos.	6,709	41,339,754	6,370,716	52,516,555	8,272,182	10,843,705	1,600,805	18,390,740	1,793,090	41,477,290	79.0	11,039,265	6,233,394	8,989,033	7,326,198
Northwestern Pacific	July	477	431,543	210,527	714,411	100,728	88,204	9,331	265,695	22,786	486,710	68.1	227,701	189,488	176,608	161,717
	7 mos.	477	2,024,062	1,049,263	3,461,525	704,986	620,748	64,440	1,649,012	169,549	3,207,511	92.7	254,014	—28,128	—66,937	189,891
Pennsylvania R. R.	July	10,485	38,168,942	10,818,367	54,114,288	7,334,169	10,618,602	818,338	18,641,155	1,605,435	39,669,560	73.3	14,444,728	11,185,280	9,821,399	8,546,929
	7 mos.	10,485	253,322,963	76,278,867	363,280,840	45,698,758	75,599,385	5,737,984	130,545,198	11,216,001	273,421,166	75.3	89,859,674	70,155,803	61,098,631	59,672,342
Baltimore, Chesapeake & Atlantic	July	130	101,564	49,050	158,558	14,609	21,100	4,112	82,806	1,151	123,778	78.1	34,780	22,204	23,273	25,211
	7 mos.	130	509,736	171,786	732,121	80,086	437,642	13,369	507,223	17,501	1,055,821	144.2	—323,700	—336,288	—333,399	—177,520
Long Island	July	403	842,026	3,045,895	4,108,724	424,425	422,279	53,240	1,359,780	89,947	2,351,987	57.2	1,756,737	1,320,208	1,113,521	937,644
	7 mos.	403	6,489,565	15,031,870	22,884,958	2,941,894	3,389,804	243,026	9,393,398	577,679	16,569,866	72.4	6,315,092	4,956,708	3,876,389	2,476,130
West Jersey & Seashore	July	370	404,395	734,926	1,198,895	139,185	140,589	19,922	452,721	27,244	780,381	65.1	418,514	191,290	160,937	235,401
	7 mos.	370	2,757,692	2,851,001	5,905,437	926,333	879,582	124,655	2,772,243	185,451	4,891,256	82.8	1,014,181	523,587	320,076	439,180
Peoria & Pekin Union	July	19	25,869	1,547	142,540	18,686	13,149	3,024	62,631	7,548	105,038	73.6	37,502	20,390	44,362	38,244
	7 mos.	19	182,310	12,175	1,139,537	120,136	96,320	23,000	476,413	53,260	769,129	67.4	370,408	250,960	401,452	289,336
Pere Marquette	July	2,244	3,328,595	338,351	3,916,473	505,547	759,101	68,334	1,229,325	108,554	2,671,200	68.2	1,245,273	1,017,390	889,715	792,163
	7 mos.	2,244	21,439,154	1,683,947	24,605,729	2,887,995	5,289,029	448,817	8,405,551	775,307	17,797,985	72.3	6,807,744	5,335,063	4,656,801	4,850,073
Pittsburgh & Shawmut	July	102	130,007	1,770	133,430	28,836	30,875	1,694	38,834	6,576	106,815	80.1	26,615	25,176	21,024	41,805
	7 mos.	102	1,097,586	30,372	1,141,182	139,896	242,884	13,114	310,159	46,732	752,785	66.0	388,397	378,968	338,901	176,578
Pittsburgh & West Virginia	July	92	335,664	4,719	370,743	22,141	78,082	16,414	65,403	20,399	213,406	57.6	157,337	105,809	185,868	86,965
	7 mos.	92	2,179,156	38,371	2,435,585	147,134	478,928	105,883	460,926	137,393	1,397,874	57.4	1,037,711	701,130	1,152,770	1,190,250
Pittsburgh, Shawmut & Northern	July	198	151,023	1,717	156,911	35,250	26,106	1,792	45,853	5,875	114,876	73.2	42,035	38,966	29,515	4,188
	7 mos.	198	1,073,422	13,739	1,107,377	223,328	221,857	12,041	352,377	41,421	851,024	76.8	256,353	234,915	183,608	57,485
Quincy, Omaha & Kansas City	July	249	36,559	7,125	50,629	105,253	6,925	850	30,015	2,404	144,921	286.2	—94,292	—99,128	—102,297	—11,401
	7 mos.	249	304,574	63,372	413,197	274,896	61,345	5,181	198,995	17,758	555,913	134.5	—142,716	—176,741	—196,106	—130,249
Reading	July	1,136	5,590,104	628,912	6,604,971	1,057,060	1,606,892	78,794	2,579,545	280,216	5,618,116	85.1	986,855	709,030	842,744	809,590
	7 mos.	1,136	42,932,940	4,651,335	50,099,893	6,886,953	12,140,069	604,053	19,115,418	1,510,838	40,329,782	80.5	9,770,111	7,217,953	7,919,124	9,180,637
Atlantic City	July	163	99,030	408,111	529,904	58,785	34,340	7,971	234,002	5,995	341,275	64.4	188,629	148,273	111,776	161,389
	7 mos.	161	800,437	1,091,054	2,015,044	487,387	189,002	57,968	1,341,040	47,447	2,126,930	105.6	—111,886	—376,342	—557,818	—413,041
Perkiomen	July	41	98,998	4,347	106,085	9,887	5,075	107	46,151	1,245	62,487	58.9	43,598	39,528	32,900	29,873
	7 mos.	41	669,612	22,132	712,927	108,053	46,809	745	333,869	8,810	498,531	69.9	214,396	190,113	143,832	171,658
Port Reading	July	19	130,494	.....	182,860	17,911	31,528	229	57,334	1,509	108,417	59.3	74,443	60,923	—10,781	13,225
	7 mos.	19	950,106	.....	1,264,670	137,641	84,443	1,603	448,362	23,734	695,675	55.0	568,995	467,438	—16,860	73,542
Richmond, Fredericksburg & Potomac	July	117	540,733	219,624	896,353	126,339	155,396	10,160	320,875	40,724	669,504	74.7	226,849	177,060	129,183	82,751
	7 mos.	117	3,361,039	2,279,281	6,831,728	769,480	1,164,931	68,051	2,366,043	257,295	4,818,725	70.5	2,013,003	1,637,876	1,180,328	1,165,900
Rutland	July	413	311,856	99,555	563,498	129,211	94,762	12,724	197,845	15,642	452,287	80.3	111,211	80,332	80,886	91,338
	7 mos.	413	2,200,710	771,945	3,927,451	775,878	720,603	79,025	1,480,284	110,612	3,179,870	81.0	747,581	553,505	553,772	450,232
St. Louis-San Francisco	July	5,167	5,387,424	960,438	6,824,304	988,499	1,348,346	134,794	2,197,309	229,644	4,822,498	70.7	2,001,806	1,597,879	1,624,437	1,537,071
	7 mos.	5,086	35,065,142	6,698,905	45,152,447	5,671,961	9,197,168	872,677	15,560,199	1,627,558	32,462,065	70.3	12,690,382	10,104,427	10,361,417	11,344,799
Ft. Worth & Rio Grande	July	233	74,030	10,416	97,338	34,549	20,674	3,663	61,036	5,666	124,810	128.2	—27,472	—31,561	—40,126	—10,078
	7 mos.	233	535,679	83,254	704,676	139,006	147,014	24,354	375,682	39,181	721,122	102.3	—16,446	—45,308	—105,570	—119,833
St. Louis, San Francisco & Texas	July	142	140,771	12,066	158,739	36,460	25,741	4,741	59,160	6,895	132,884	83.7	25,855	22,690	—467	—8,063
	7 mos.	142	850,146	80,305	965,307	160,801	172,364	33,870	392,061	49,024	805,404	83.4	159,903	139,980	—27,627	43,722
St. Louis Southwestern	July	940	1,307,493	85,666	1,456,473	181,070	234,833	67,736	384,768	64,473	940,035	64.5	516,438	464,739	324,571	270,802
	7 mos.	940	9,229,325	576,338	10,260,734	1,398,461	1,599,039	476,631	2,733,375	453,389	6,693,928	65.2	3,566,806	3,126,477	2,268,523	1,734,670
St. Louis Southwestern of Texas	July	807	489,161	47,166	580,982	235,551	117,178	29,204	263,836	35,082	684,925	117.9	—103,943	—131,697	—115,504	—61,325
	7 mos.	807	3,353,389	301,428	4,000,597	1,295,917	857,227	213,071	1,779,635	239,490	4,424,017	110.6	—423,420	—618,684	—391,963	—159,411
San Diego & Arizona	July	156	80,929	12,699	95,542	15,166	16,988	3,911	27,147	8,714	73,223	76.6	22,319	16,441	15,338	11,070
	7 mos.	156	599,238	125.354	756,913	119,074	119,447	28,588	212,412	61,263	550,423	72.7	206,490	166 548	164,053	235,402
Seaboard Air Line	July	4,500	3,251,251	515,955	4,134,110	503,148	742,779	190,987	1,601,776	175,020	3,254,518	78.7	879,592	598,009	619,522	746,487
	7 mos.	4,499	25,938,419	5,132,753	34,216,632	3,754,732	5,601,803	1,419,829	12,836,516	1,303,545	25,426,742	74.3	8,789,890	6,594,209	6,100,430	6,588,877

Revenues and Expenses of Railways

MONTH OF JULY AND SEVEN MONTHS OF CALENDAR YEAR 1928—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1927.
Southern Ry.	July	6,770	$8,657,733	$2,083,072	$11,550,367	$1,765,254	$1,990,033	$251,627	$3,909,421	$352,637	$8,346,770	72.3	$3,203,597	$2,418,598	$2,353,484	$2,254,237
	7 mos.	6,771	61,667,649	13,964,106	81,980,894	12,188,585	15,018,977	1,789,680	27,675,712	2,465,877	59,702,013	72.8	22,278,881	16,912,571	15,451,940	16,489,282
Alabama Great Southern	July	314	587,896	158,315	797,789	172,762	179,262	22,151	241,052	22,981	645,172	80.9	152,617	83,374	124,751	165,639
	7 mos.	314	4,303,452	1,014,011	5,696,082	1,003,098	1,175,744	151,703	1,761,355	166,537	4,306,466	75.6	1,389,616	963,223	1,171,799	1,277,232
Cinn., New Orleans & Tex. Pacific	July	338	1,449,532	260,724	1,796,907	311,292	346,426	44,156	515,727	50,309	1,278,876	71.2	518,031	401,247	368,853	488,015
	7 mos.	338	9,781,464	1,941,887	12,386,262	1,944,065	2,501,410	296,445	3,576,291	368,028	8,787,736	70.9	3,598,526	2,844,749	2,660,419	2,832,008
Georgia Southern & Florida	July	397	238,357	74,699	338,076	76,843	72,691	9,216	155,366	10,990	330,191	97.7	7,885	—11,622	—15,221	35,068
	7 mos.	399	1,578,333	829,441	2,624,311	539,057	544,269	79,999	1,114,394	79,081	2,402,672	91.6	221,639	67,491	50,901	—41,836
New Orleans & Northeastern	July	204	317,629	70,199	413,534	64,778	74,962	12,809	128,257	14,060	298,819	72.3	114,715	71,018	48,030	53,110
	7 mos.	204	2,432,186	485,946	3,130,153	439,592	578,064	88,482	931,164	104,405	2,170,054	69.3	960,099	652,130	439,726	503,979
Northern Alabama	July	110	70,582	6,319	79,391	22,877	3,350	1,657	30,941	2,760	61,572	77.6	17,819	11,919	—8,433	952
	7 mos.	110	554,689	45,163	617,884	157,433	21,071	14,400	230,090	19,383	442,117	71.6	175,767	132,905	—8,307	107,972
Southern Pacific	July	8,902	13,906,035	3,547,802	19,237,870	2,352,888	3,037,909	396,370	6,238,695	627,958	12,959,417	67.4	6,278,453	4,716,261	4,179,928	3,578,376
	7 mos.	8,910	87,452,703	22,728,262	121,451,443	15,666,698	20,739,519	2,973,091	40,260,287	4,660,594	86,237,139	71.0	35,214,304	25,440,588	23,258,322	21,359,637
So. Pacific Steamship Lines	July	....	694,174	92,768	915,295	17,956	230,352	16,708	558,245	33,769	857,030	93.6	58,265	54,837	56,802	86,212
	7 mos.	....	5,189,852	377,886	6,430,103	123,948	1,371,520	118,647	4,150,641	252,344	6,017,100	93.6	413,003	389,718	397,719	675,340
Texas & New Orleans	July	4,728	4,197,912	939,653	5,561,657	941,809	1,166,144	173,842	1,981,274	255,332	4,532,306	81.5	1,029,351	668,075	811,829	229,001
	7 mos.	4,728	28,941,012	6,374,471	38,311,006	6,670,443	7,977,512	1,240,059	14,151,896	1,845,978	31,871,769	83.2	6,439,237	4,215,247	3,179,416	1,819,264
Spokane, Portland & Seattle	July	554	601,232	126,193	796,809	136,685	91,414	14,357	222,018	23,480	493,503	61.9	303,306	212,522	210,724	198,426
	7 mos.	554	3,823,454	667,159	4,927,693	790,540	706,916	80,748	1,479,681	156,163	3,244,542	65.8	1,683,151	1,089,844	1,053,130	1,048,924
Tennessee Central	July	296	212,242	20,356	245,521	63,901	34,617	9,146	93,445	12,088	213,129	86.8	32,392	27,211	8,176	36,507
	7 mos.	296	1,620,438	139,610	1,851,049	379,571	284,581	61,896	677,372	90,888	1,493,483	80.7	357,566	317,728	187,167	193,945
Terminal R. R. Assn. of St. L.	July	55	.....	.....	1,030,086	197,528	78,540	2,743	438,063	25,243	744,339	72.3	285,747	193,781	277,892	276,412
	7 mos.	55	.....	.....	7,593,102	1,205,171	615,856	17,419	3,151,908	2[illegible]286	5,220,919	68.8	2,372,183	1,670,679	2,250,795	2,358,222
Texas Mexican	July	162	83,763	4,893	96,472	13,412	16,396	4,538	37,937	5,979	78,295	81.1	18,177	13,177	6,606	—3,568
	7 mos.	162	677,575	29,084	753,450	106,109	116,239	27,097	254,509	41,418	544,581	72.2	208,869	173,662	121,966	15,894
Toledo, Peoria & Western	July	239	158,200	1,076	165,826	24,351	11,558	11,302	59,602	7,963	114,776	69.2	51,050	42,728	31,703	5,130
	7 mos.	239	1,085,098	14,704	1,148,238	270,557	115,840	76,445	396,603	58,544	917,989	79.9	230,249	205,652	119,371	—33,352
Toledo Terminal	July	21	.....	.....	118,537	4,630	13,927	670	41,151	5,334	65,712	55.4	52,825	36,407	60,907	44,741
	7 mos.	28	.....	.....	841,345	58,066	110,347	4,002	328,587	33,764	534,766	68.5	306,579	184,736	374,906	366,862
Trinity & Brazos Valley	July	367	194,082	10,790	210,791	45,888	31,638	5,409	79,833	12,023	171,043	81.1	39,748	32,123	7,200	—2,224
	7 mos.	367	1,156,199	52,594	1,256,626	318,850	229,628	37,337	562,851	81,398	1,170,511	93.1	86,115	32,852	—138,022	—138,289
Ulster & Delaware	July	128	32,619	83,463	161,667	17,107	15,050	1,658	62,405	4,579	100,799	62.3	60,868	55,117	47,995	32,374
	7 mos.	128	255,923	122,130	643,724	105,584	109,152	10,106	311,023	33,607	569,472	88.5	74,252	34,001	11,099	—32,389
Union Railroad of Penna.	July	45	.....	.....	934,367	89,055	188,669	177	362,075	15,758	655,734	70.2	278,633	233,633	356,887	245,513
	7 mos.	45	.....	.....	5,615,996	602,314	1,269,322	1,147	2,567,687	95,199	4,535,669	80.8	1,080,327	883,808	1,549,728	1,155,550
Union Pacific	July	3,714	7,165,466	1,467,971	9,541,299	1,469,377	1,952,654	182,199	2,631,651	345,224	6,820,158	71.5	2,721,141	2,021,547	1,660,304	1,340,813
	7 mos.	3,712	47,085,199	8,576,099	61,128,311	7,880,692	13,365,140	1,295,160	17,041,843	2,264,127	43,046,686	70.4	18,081,625	13,272,074	11,589,143	8,803,088
Oregon Short Line	July	2,539	2,068,369	434,045	2,769,957	525,819	501,060	57,817	879,157	123,214	2,165,009	78.2	604,948	329,626	209,608	173,264
	7 mos.	2,539	16,156,998	2,266,612	19,946,348	3,619,915	3,609,438	400,576	5,931,003	861,731	14,858,798	74.5	5,087,550	3,201,683	2,573,645	1,930,530
Oregon-Wash. R. R. & Nav. Co.	July	2,356	1,795,755	330,032	2,359,193	493,069	366,529	78,194	888,307	129,711	1,987,010	84.2	372,183	184,196	21,438	—8,513
	7 mos.	2,345	12,223,372	1,968,109	15,736,162	3,336,968	2,708,239	541,079	6,058,170	868,882	13,715,761	87.2	2,020,401	685,176	—292,195	—73,714
Los Angeles & Salt Lake	July	1,209	1,333,486	569,736	2,212,427	401,161	329,161	74,380	648,950	81,162	1,698,937	76.8	513,490	367,831	262,709	178,674
	7 mos.	1,209	9,443,990	2,698,712	13,625,424	2,635,272	2,552,376	556,500	4,388,108	533,051	11,408,292	83.7	2,217,132	1,252,577	563,705	697,267
St. Joseph & Grand Island	July	258	259,614	11,780	295,445	73,705	38,023	4,822	107,692	15,298	239,540	81.1	55,905	42,427	22,272	22,975
	7 mos.	258	1,959,267	82,658	2,178,806	370,045	270,221	24,496	759,786	103,532	1,528,080	70.1	650,726	509,775	391,563	134,852
Utah	July	111	113,391	.....	113,458	32,682	39,4[illegible]	367	23,455	5,669	101,650	89.6	11,808	5,591	—2,374	23,233
	7 mos.	111	894,083	108	897,174	163,323	285,801	2,688	196,976	40,300	689,088	76.8	208,086	159,623	100,539	238,481
Virginian	July	545	1,322,284	39,176	1,433,774	174,951	301,441	15,018	296,077	35,190	816,554	57.0	617,220	467,214	521,547	644,156
	7 mos.	545	9,581,490	255,843	10,436,514	1,325,496	2,267,222	103,133	2,281,679	259,182	6,211,133	59.5	4,225,381	3,229,135	3,497,788	5,727,817
Wabash	July	2,524	4,717,082	667,290	5,786,401	958,091	1,003,472	174,948	2,203,557	178,913	4,546,817	78.6	1,239,584	998,378	706,787	498,118
	7 mos.	2,524	32,638,515	4,186,671	39,560,864	5,436,380	6,943,300	1,179,809	15,389,461	1,271,929	30,320,015	76.6	9,240,849	7,481,142	5,340,808	4,582,030
Ann Arbor	July	293	436,590	18,667	483,509	62,849	105,816	13,598	177,959	11,046	367,464	76.0	116,045	90,181	61,468	32 623
	7 mos.	293	3,095,601	125.230	3,335,922	362,631	687,057	94,549	1,299,154	80,327	2,514,833	75.4	821,089	646,998	460,796	451,387
Western Maryland	July	878	1,310,045	39,473	1,410,103	249,082	259,126	46,584	367,044	44,143	976,913	69.3	433,190	353,190	362,893	472,861
	7 mos.	852	9,976,313	222,682	10,535,290	1,685,546	2,032,389	295,743	2,985,964	312,412	7,354,614	69.8	3,180,676	2,595,676	2,737,553	3,327,062
Western Pacific	July	1,050	1,252,428	192,199	1,610,934	400,156	281,670	68,270	530,340	45,215	1,396,016	86.7	214,918	120,184	133,466	41,708
	7 mos.	1,050	7,072,661	879,573	8,603,617	2,230,008	1,798,037	413,586	3,246,947	327,224	8,153,264	94.8	450,353	—216,447	98,084	516,569
Wheeling & Lake Erie	July	511	1,809,233	31,858	1,980,470	261,748	368,392	35,327	521,315	43,476	1,230,645	62.1	749,825	574,762	562,463	307,781
	7 mos.	511	10,446,575	185,201	11,316,775	1,427,268	2,537,751	241,828	3,255,479	316,687	7,788,009	68.8	3,528,766	2,550,620	2,520,685	2,098,511
Wichita Falls & Southern	July	168	94,582	2,971	101,699	15,010	11,356	2,457	26,451	4,110	59,959	58.96	41,740	36,766	33,848	16,618
	7 mos.	168	529,423	17,574	578,863	100,199	81,353	18,562	184,499	27,992	418,556	72.31	160,307	124,613	106,831	132,683

News of the Week

(*Continued from Page 509*)

stated that the railroad's estimates for the same work were about $25,000,000. Early in the hearing Col. Robert B. McBride, assistant chief of supplies of the War department, presented a communication from the War department which stated that such a railroad is considered as a necessity for national defense in the Northwest and pointed out the ease with which it could be defended.

The interests of the three states contend that the railroad would better their markets, facilitate interstate commerce, reduce transportation costs and open up additional resources located along the Snake river. Witnesses stated that building sandstone, copper, limestone, granite and gravel deposits may be found near the river. Lumbermen told of the difficulties of transporting forest products from that section to railroads. Others testified to the benefits that would come to stock and fruit raisers.

Dr. F. B. Laney of the geology department of the University of Idaho declared that the Snake river canyon has scenic attractions equal to those of the Royal Gorge in Colorado.

President Budd Addresses Mechanical Engineers

Mechanical developments and improvements in railway operation during the last eight years, contributed by the engineering profession, have enabled the railways to give the best service they have ever given, and at prices lower than ever before, when measured in terms of prices of other commodities, said Ralph Budd, president of the Great Northern, in an address at the annual dinner of the American Society of Mechanical Engineers at St. Paul, Minn., on August 29. Employees, have never enjoyed as favorable working conditions as at present, and never before have the railroads been in such splendid physical condition.

"Although railroad expansion in the United States is nearly over, the roads have added about $6,000,000,000 to their national investment since the World War. This money, which amounts to about one-fourth the total railway investment in the country, was expended for improving existing railroad plants. There are now no more locomotives and cars and practically no more railroad lines in the United States than in 1920. If the railroads had not been able to use the mechanical improvements produced by the engineering profession, freight charges would have been higher, or wages would have been lower, or the roads would have ceased to pay dividends. There was no alternative for the railroads; the cost of operation had to be reduced."

Great Northern Equipment-Building Program

Equipment construction work to be done in Great Northern shops this fall and winter will involve an expenditure of approximately $3,000,000, in addition to the appropriation of $1,100,000 for 10 Mountain type locomotives authorized during August. The new work will include the reconstruction and equipping with steel underframes of 2,500 box cars and the construction of 500 automobile box cars, 25 cabooses and 10 locomotive tenders. This is an increase of 500 cars over the number reconstructed last year.

The cars to be rebuilt are of 80,000 lb. capacity. They will be fitted with underframes, friction draft gears, type D couplers, 10-in. air brake cylinders with K-2 triple valves, No. 2 plus brake beams and bands and tie rods. The cost of this work will be between $500 and $600 per car.

The new box cars are of special design, 50 ft. long, of 100,000 lb. capacity, and will cost about $3,000 each. They will be fitted with 12-ft. staggered doors to facilitate the loading of automobiles and machinery. The cabooses will be 25 ft. in length and will also be equipped with steel underframes.

The 10 locomotive tenders will be of 17,000 gal. water capacity, which is the largest capacity of tender used on the Great Northern except on engines hauling ore trains. The large tenders are expected to speed up train movement by eliminating water stops. They will be used on the Montana division on the O-class engines. The tenders will cost approximately $15,000 each. The 10 Mountain type locomotives will cost approximately $110,000 each and will be among the largest locomotives in service in America. With the easy grades along the Great Northern's mountain route, these heavy locomotives will haul the same length trains that are handled on the Prairie divisions where trains are frequently made up of more than 100 cars.

This equipment-building program is in addition to the regular equipment maintenance work carried on by the Great Northern which amounts to approximately $18,000,000 a year.

C. P. R.'s President on Railway Earnings

The relationship between Canada's publicly owned railway system and her largest privately-owned road was pointed out by President E. W. Beatty of the Canadian Pacific in an address to the Vancouver Board of Trade last week. After enumerating some facts indicating the increased prosperity of the country, such as the growth in bank deposits, increased car loadings and the inflow of outside capital, Mr. Beatty said:

"Notwithstanding these evidences of prosperity your transportation companies showed a decrease in net earnings during 1927. Increased wage scales added millions to operating expenses, while reduced freight rates decreased by several millions our gross earnings. I am perhaps a prejudiced witness on any transportation subject, but my preconceived ideas in favor of the railway companies is based on their history and their contribution to the growth of Canada, and on their importance as a factor in its future progress. I would like to see them strong so that they may assume with confidence their share of the burden of Canadian development, and be able to do so without weakened credit and restricted facilities.

"Canada has two large systems giving service, which merit support. The accident of the character of the ownership of the two systems can have nothing to do with the problem in respect of rates. The fundamentals of rates, namely their reasonableness and their freedom from unjust discrimination, do not change with the character of the companies' ownership. It has been stated that, because of their ownership of the National Railways, the people of Canada may elect that services shall be performed at unremunerative rates, and the resulting deficits made up by increased taxation. No view could be more erroneous. Forty per cent of the railway mileage of this country, representing an approximate investment of $1,200,000,000, is in the hands of private owners. These companies, as well as the National System, must operate under the provisions of the Railways Act, and are subject to rate regulation by the Commission. The rates on all Canadian railways must of necessity be on the same basis. Traffic will follow the cheapest route, and any railway with a higher scale rate would speedily lose the only means by which it can be self-sustaining."

North Shore Uses Statues To Advertise

The Chicago, North Shore & Milwaukee is erecting artistic statues in the territory which it serves, as a medium for carrying its message of service to the public.

These statues, which are made of a composition that will withstand the elements, present the figure of a town crier of early American days striding along with a bell in one hand and a scroll in the other. On the scroll are inscribed in large letters the words: "Did you ever travel 80 miles an hour?"—emphasizing the high speeds made

by North Shore Line trains between Chicago and Milwaukee.

The figure of the town crier is seven and one-half feet tall and appears to be carved out of marble. It stands on a seven foot base, which is finished to represent light gray granite. On the four sides of the base are large North Shore Line emblems, in bas-relief, and placques telling of the territory and leading communities served. Ten of these statues are being set up, eight of which are already completed.

Great Northern Employee-Stockholders

Approximately 1,300 employees of the Great Northern Railway have in the past five years purchased 18,400 shares of stock in the company under a partial payment plan adopted in November, 1923. At that time, Great Northern stock was selling at $57 a share. It now is quoted at slightly above $100, and has paid a dividend of $5 a share every year. Each employee may purchase from 1 to 21 shares at one time and may repeat this operation as often as desired, provided he is not paying for more than 25 shares at one time. The minimum initial payment is $5 a share and the minimum monthly payment is $3 a share. While employees are paying for stock they are charged 5 per cent interest on unpaid balances but are credited with all dividends declared during the term of the payment. All branches of the service, from the president to common laborers, are represented in the list of purchasers.

C. P. R. Aids Colonization

New plans involving substantial outlays by the Canadian Pacific to aid the settlement of British colonists in Canada have been formulated by the colonization department of that railway, in co-operation with the Overseas Settlement Board of the British government. The details of this scheme were worked out a few days ago in Montreal during the visit of Lord Lovat, head of the Overseas Board.

One undertaking provides for the building of one hundred cottages by the Canadian Pacific for the use of British families. The latter will be selected and brought to Canada by the Department of Colonization and Development, secured in some farm work established in the cottages, and, after gaining the necessary experience, will be facilitated in settlement on their own farms. The cottages thus vacated will be then available for further groups of British colonists.

Another agreement with the Overseas Settlement Committee involves the recruitment, reception, placement on farms and subsequent supervision of one thousand British families during the next five years. This particular scheme will be carried on as an extension of the work which has already been done by the Canada Colonization Association, a subsidiary of the Canadian Pacific Department of Colonization, and Development, through which organization a considerable number of British families have been placed.

Traffic

The Ohio Valley Shippers' Advisory Board will hold its 19th regular meeting at Louisville, Ky., on September 18. At a banquet to be given by the Transportation Club of Louisville, the Hon. Flem D. Sampson, governor of Kentucky, will be the principal speaker.

The Interstate Commerce Commission has assigned the consolidated southwestern cases for further hearing on October 22 at New Orleans before Examiner Bardwell. The revision of rates prescribed by the commission went into effect in July but parts of the tariffs were suspended for further consideration.

The movement of fruits and early vegetables from the state of Washington to eastern markets this season is more than double that of last year up to September 1, according to the car movement records of the Great Northern, the total to date being 1,170 cars compared with 554 cars last year.

The first shipment of grain by barge from Minneapolis, Minn., was carried down the Mississippi river by the Upper Mississippi River Barge Line Company on September 5; four barges, 50,000 bushels. A fifth barge of grain and other freight was picked up at St. Paul. This is the first of a series of semi-weekly consignments expected to total 1,340,000 bushels.

The Southern Pacific has established an automobile baggage service between San Francisco, Cal., and Del Monte on the "Del Monte," a daily passenger train between San Francisco and Pacific Grove. The passenger purchases a baggage check for his machine at the time of boarding the train and the machine (at a suitable price) goes along with him. These baggage cars have end doors and special steel runways to facilitate the loading and unloading of the automobiles.

Package car service from Chicago to approximately 2,000 points in the United States established a new record for that city in July when 93.05 per cent of the cars arrived at destination on time. The total number of cars dispatched was 38,460, of which 35,787 were on time; 2,026 or 5.27 per cent were one day late, 538 or 1.4 per cent two days late and 109 or 0.28 were three days or more late.

On the ground that the Interstate Commerce Commission does not have jurisdiction over the rates, practices and regulations of water carriers on traffic from interior points to the Atlantic ports, which is reshipped on new bills of lading to Pacific coast points, Examiner E. P. Hurley, in a proposed report, has recommended that the commission dismiss the complaint of the Baltimore Association of Commerce assailing the rates, etc., as unduly discriminatory against Baltimore and in favor of New York, Philadelphia and Boston.

The Denver & Rio Grande Western has been granted permission to abandon its Floresta branch, between Crested Butte, Colo., and Floresta, by the Public Utilities Commission of Colorado, effective August 4, 1929. As most of the road is closed by snow for most of the winter months, the abandonment date was set 11 months ahead in order to give owners of lumber, mining and ranch interests on the branch ample time to remove any property next spring and summer before the line is permanently closed.

The Chicago & Alton has petitioned the Illinois Commerce Commission for permission to withdraw nine local passenger trains, giving as the reason, decreased traffic on short haul passenger trains. The company seeks permission to eliminate the service on September 30 and asks for an early hearing of the petition. The trains include two between Dwight, Ill., and Bloomington, two between Dwight and Peoria, one between Peoria and Springfield, two between Mexico, Mo., and Roodhouse, Ill., and two between East Hardin and Carlinville.

Railroads in the central west will experience better business during the remaining four months of this year, according to J. B. Ford, vice-president of the Chicago & Eastern Illinois. If the miners' agreement is signed on September 17, which now seems probable, most of the mines on the Chicago & Eastern Illinois, totaling 79 properties in Illinois and Indiana, will begin production, a large number of them on full time. The influence of good crop conditions in this territory also is being felt by this road. Last year 400 cars of peaches were handled while this year 900 cars have been moved.

Dismissal of a complaint of the San Diego Chamber of Commerce, assailing the round-trip all-year tourist and summer excursion passenger fares between origin and destination points in California, Oregon and Washington and the East, is recommended to the Interstate Commerce Commission in a proposed report by Examiner Harris Fleming. He recommends a finding that the rates via San Diego in connection with certain diverse route tickets to or from San Francisco, as to which San Diego complained because they are higher than the routes via certain other routes in amounts of $7.40 and $6 respectively, are not unreasonable, unjustly discriminatory, or unduly prejudicial.

Officers of the Mississippi Valley Association, the Upper Mississippi & St. Croix River Improvement Association and the Upper Mississippi Barge Line association have sent a telegram to General Edgar Jadwin, chief of the United States army engineers, protesting against a report made by a government engineer that there is not sufficient commerce in sight to justify the cost of the proposed nine foot upper river channel and asking that a hearing be held in the Twin cities on September 25 so that interested parties

may show that sufficient tonnage is in sight to warrant the construction of the channel; that joint rail and river rates, authorized by Congress, will insure a large tonnage; that an increasing use of the river is being made by inland towns; that the Ohio and Illinois rivers have nine-foot channels and that the Upper Mississippi is entitled to similar consideration; that government engineers reported the construction of the Hastings dam to be unwarranted until need was shown by a traffic survey; and that a traffic survey is necessary before any conclusions can be reached.

Trans-Missouri-Kansas Shippers' Board

The Trans-Missouri-Kansas Shippers' Advisory Board will hold its 22nd regular meeting at Joplin, Mo., on September 19. C. E. Johnson, president of the Kansas City Southern will talk on general railroad transportation and the importance of co-operation between the public and the Railroads. The Joplin Chamber of Commerce, the Tri-State Traffic Club and the Tri-State Zinc and Lead Producers' Associations have united to arrange an inspection trip through the Tri-State mining district.

Grain Elevators Built on Canadian National

So far this year, 108 new grain elevators have been built at country points on the Canadian National. These provide an additional storage capacity of 3,566,000 bu., divided among the prairie provinces as follows: Manitoba, 21 elevators with 744,000 bu.; Saskatchewan, 18 elevators with 546,000 bu., and Alberta, 69 elevators with 2,276,000 bu. The capacity of all elevators at the Canadian head of the lakes, (Fort William and Port Arthur) during the crop season 1927-28 was 72,540,000 bu. With new elevators and additions to existing elevators the capacity for this year's crop at those ports will be 86,000,000 bu. On the Pacific coast, that is, at Vancouver, Victoria, New Westminster and Prince Rupert, the capacity of the elevators last year was 9,795,000 bu. This capacity will be increased this year to 14,175,000 bu. The Dominion government, under the jurisdiction of the board of grain commissioners for Canada, operates interior storage elevators at Calgary, Edmonton, Moose Jaw and Saskatoon, with a combined capacity of 12,000,000 bu. There are also private elevators doing a storage and mixing business in the Calgary, Edmonton, Moose Jaw, Saskatoon and Winnipeg districts, with a capacity of 11,192,000 bu.

Express Refrigerator Service Recommended for Strawberries and Dewberries

The Interstate Commerce Commission on September 11 made public a proposed report by Director W. P. Bartel of its Bureau of Service and Examiner W. R. Brennan recommending a finding by the commission that the present freight service for the transportation of strawberries from Florida, North Carolina, South Carolina and Alabama to points in official classification territory and dewberries from North Carolina and South Carolina to the same destinations is inadequate. They also recommend that the commission exercise the power conferred upon it by paragraphs 10 and 11 of Section 1 of the interstate commerce act as amended in 1920 and require the carriers to equip themselves with express refrigerator cars and to establish express refrigerator carload service from and to the points named. The express companies should be dismissed as respondents to the proceeding, the report says, on the ground that the amendment of Section 1 relating to car service does not apply to express companies. The proposed report, which is voluminous, follows an investigation instituted by the commission in Aprl, 1926.

The individual estimates made by the carriers as to the number of cars required for the movement of strawberries and dewberries totalled 1,546, but the report says that if the carriers only purchase sufficient cars to handle the North Carolina movement and these cars are also used for the movement from other sections, the number of cars required will not only be reduced, but the idle time of such cars will also be greatly curtailed. The express company stated on the record that if the southern carriers should acquire 800 cars it could use them in April and May and to some extent in June but that it would have no use for them from July to March, inclusive. The carriers contended that from the standpoint alone of economy and efficiency of operation the establishment of express carload service should not be ordered. It was stated that even though the necessary cars were available the maintenance of express refrigerator car service would only be possible at a heavy cost of additional train service. They asserted that in addition to the present arrangements for freight service, which would have to be continued, such as assembling and holding cars in readiness, initial icing and placing, similar arrangements would have to be made with respect to express service. The cost of a modern express refrigerator car was estimated by the carriers at $8,000.

"The record shows," the report says, "that the movement of commodities under refrigeration is constantly increasing; and such constant increase will require additional refrigerator cars, either freight or express. If the carriers are here required to furnish express refrigerator cars the pressure for additional freight refrigerator cars will be lessened to that extent. It is reasonable to anticipate that in the natural course of events shippers of other commodities will demand express refrigerator service and that such service could be advantageously extended to other points. The establishment of express carload service would probably be followed by an increase in the strawberry movement from these sections."

Equipment and Supplies

Locomotives

THE BELT RAILWAY OF CHICAGO has ordered 5 eight-wheel switching locomotives from the Baldwin Locomotive Works. Inquiry for this equipment was reported in the *Railway Age* of September 1.

Freight Cars

THE GREAT NORTHERN has ordered 500 flat cars from the Standard Steel Car Company and will build 500 box cars in its own shops. Inquiry for this equipment was reported in the *Railway Age* of August 11.

Passenger Cars

THE NORTHWESTERN PACIFIC is inquiring for five electric cars and five trailers.

THE BANGOR & AROOSTOOK has ordered 2 combination baggage and mail cars from the Osgood-Bradley Car Company. Inquiry for this equipment was reported in the *Railway Age* of August 25.

THE CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC has placed an order with the Railway Locomotor Company, Chicago, for a high pressure steam motor car equipped with a 450 hp. Locomotor power plant of the International Harvester type. The car body, a 61 ft. baggage and mail car with 12 ft. of the floor space required for power plant units, will be constructed by the Pullman Car and Manufacturing Corp. The total weight of the car and power plant is 100,000 lb. The car is designed to handle two or three trailers. This type of car was described in the *Railway Age* of October 15, 1927.

Iron and Steel

THE NORFOLK & WESTERN is inquiring for 2,500 tons of steel for bridge work at Columbus, Ohio.

THE BALTIMORE & OHIO has placed an order for 200 tons of steel for a bridge in West Virginia.

THE PENNSYLVANIA is inquiring for 300 tons of steel for various bridges. This company recently gave an order for 500 tons of steel for a bridge at Chicago, to the Ft. Pitt Bridge Works.

THE BOSTON & MAINE is inquiring for 150 tons of steel for a bridge near Boston, Mass.

THE CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC has ordered 1,000 tons of structural steel for bridge work at Byron, Ill. from the American Bridge Company.

Supply Trade

August Wilks has been appointed works manager of the **Kearney & Trecker Corporation**, Milwaukee, Wis., and **C. M. Cheadle, Jr.** has been appointed advertising manager.

W. E. Tierney has been appointed representative in the South and Southwest of **The Botfield Refractories Company**, Philadelphia, Pa. Mr. Tierney will have his headquarters at New Orleans, La. He is a mechanical engineer and a graduate of Tulane University.

O. B. Capps, Inc., with offices in the Graybar building, 420 Lexington avenue, New York City, has been appointed eastern representative of **The Prime Manufacturing Company**, Milwaukee, Wis.

C. R. Ahrens, who has been appointed eastern sales manager of the **Chicago Railway Signal & Supply Company**, entered the employ of the Delaware, Lackawanna & Western at Scranton, Pa., in March, 1909, as a receiving clerk in the general storehouse, later being appointed chief clerk. In 1911, he was promoted to storekeeper in charge of maintenance of way supplies at Hoboken, N. J., which position he held until 1916, when he entered the sales department of the signal Accessories Company in the New York office. He resigned from this position in 1918 to become eastern representative of the Chicago Railway Signal & Supply Company, in which capacity he served until 1926 when he resigned to take up special sales work in New York. He is now returning to the Chicago Railway Signal & Supply Company as eastern sales manager, with headquarters at 30 Church street, New York.

Horace M. Wigney has been appointed manager of **Safety Refrigeration, Inc.** with office at 75 West street, New York. This is the subsidiary of **The Safety Car Heating & Lighting Co.**, which controls the use of Silica Gel for refrigeration in connection with transportation. Mr. Wigney was born in Chicago on May 7, 1882, and began railway work in the transportation department of the Illinois Central in 1899, as car distributor. From 1903 until 1906 he served as general car accountant for the Cold Blast Transportation Company, also the Doud Stock Car Company, in Chicago. When the Pacific Fruit Express Company was organized in 1906, he went with that company as car accountant and later served as assistant to the vice-president and general manager, also as superintendent of transportation in charge of all of its activities east of the Missouri river. In 1915 Mr. Wigney became vice-president of the Dairy Shippers' Dispatch and later was elected president of that company; in 1917 the entire equipment of this company was sold to the American Refrigerator Transit Company. Mr. Wigney then spent considerable time in South America studying conditions relating to railroad transportation and the movement of perishable products under refrigeration. In 1922, he was appointed general manager of the Western Refrigerator Car Line, which was formed to operate over the Western Pacific and its connections; this company was later merged with the Pacific Fruit Express Company. In June, 1923, when the Merchants Dispatch Refrigerator Line was organized to operate over the New York Central Lines and its connections, he entered the service of that company as superintendent of car service and was later made general superintendent of transportation which position he held until June, 1927, when he left the service of that company to enter other business in California.

Horace M. Wigney

A RECENT FRENCH RAILROAD ACCIDENT at Le Mans, causing the death of five postal employees, has resulted in immediate action on the part of the French Railway Commission on a pending plan for the improvement of the railway mail service. An order has been placed for the construction of 80 all-steel mail cars provided with the most modern equipment.

While the completion of the order is scheduled for the end of 1929, the first of the new cars will be placed in service as promptly as possible. In the meantime, measures have been taken for the immediate installation of electric light on all mail coaches which are still being lighted by gas. Sixty-six mail cars of the flat car type have also been recently put into service for the transportation of mail in truck-load lots. These all-metal cars are intended more particularly for use on the lines serving the Channel ports and other export mail routes, the mail being packed in large containers (two to a car) and transferred directly from the train to the boat by means of cranes.

Construction

CLEVELAND UNION TERMINALS.—This company has awarded a contract to the McClintic-Marshall Company, Pittsburgh, Pa., for steel work in connection with track elevations at East Cleveland, Ohio.

ERIE.—This road plans the elimination of three grade crossings in New York State, one at East Corning; the second at New Windsor, and the third at Vail's Gate. Bids are soon to be invited on these projects.

FLORIDA EAST COAST.—The Interstate Commerce Commission has authorized this company to construct a 9.5-mile line from Belleglade-Chosen, Fla., to Lake Harbor; estimated construction cost, $384,340.

HOCKING VALLEY.—This road has authorized an expenditure of $1,800,000 for new track and yard facilities on its Toledo division. Approximately $850,000 of the authorization covers the construction of a new southbound yard at Walbridge, Ohio. The relocation of a public highway and the erection of a 100,000-gal. water supply tank and mains are the only parts of this work to be done under contract. The highway work has been awarded to the Fritz-Rumer-Cooke Company, Columbus, Ohio, while bids on the water supply facilities were opened on September 6. The remaining $950,000 of the authorization will be expended on the construction of second track between Longley and LeMoyne, Ohio,—a distance of about 19 miles. This will complete second track work on the Toledo division from Columbus to Walbridge. The Fritz-Rumer-Cooke Company have also received a contract covering grading, masonry and track laying on one section of the line while a contract for similar work on the remaining section has been awarded to the Sturm & Dillard Company, Columbus, Ohio.

NEW YORK CENTRAL.—This road will receive bids until September 18th for work in connection with the roofing of openings over its depressed tracks along Park avenue between Fifty-seventh and Seventy-second streets, New York. The work is estimated to cost approximately $200,000.

NEW YORK CENTRAL.—Several contracts have recently been awarded by this road. Projects involved in these awards, together with the names of firms to which the contracts were given, follow: Construction of a grain drier for elevator at Weehawken, N. J., (Folwell Engineering Company, Chicago); elimination of grade crossing at Brighton, N. Y., and construction of towers and power house at Dewitt, N. Y., (Wm. M. Ballard, Inc., New York); elimination of grade crossing at Nepperhan, N. Y., (Lyons-Slattery Co., Inc., New York,); extension of platforms, canopies and fence at Botanical Garden, Mt. Vernon, Bronxville, Tuckahoe, Crestwood, Scarsdale, Harts-

dale and White Plains, N. Y., (Edward J. Duffy Co., Inc., New York,) extension of canopy and construction of subway at Ossining, N. Y. and addition of second story to portion of baggage and mail room at Utica, N. Y., (H. R. Beebe, Inc., Utica, N. Y.,); alterations to yard at Mott Haven, N. Y., (Babor-Comeau & Co., Inc., New York); manufacture, delivery and erection of electrical equipment for power house at Harmon, N. Y., (General Electric Supply Corp., New York,); installation of feeders for electric light and power lighting facilities for platforms and canopies, at Buffalo, N. Y., (Fischbach & Moore, Inc., New York).

NEW YORK, NEW HAVEN & HARTFORD.—Six contracts, involving estimated expenditures totalling $280,000, have recently been awarded by this road. The largest, involving approximately $75,000, went to Coleman Bros., Boston, Mass., for substructure work in connection with alterations to the West Squantum street bridge, Quincy, Mass. A second contract for the construction of seven additional stalls to the enginehouse at Maybrook, N. Y., at a cost of about $55,000 was awarded to the H. Wales Lines Company, Meriden, Conn., while a third, involving an estimated expenditure of about $50,000 for the substructure and deck of a new highway bridge at North Windham, Conn., was given to V. N. Famiglietti & Sons, Providence, R. I. Of two other contracts, each involving an expenditure of approximately $35,000, one, for the extension of four enginehouse stalls at Southampton street, Boston, Mass., went to the Tredennick-Billings Company, Boston, Mass., and the other, for alterations and additions to a coal pocket at South Boston, Mass., went to the Wilbur C. Hudson Corporation, New York. The sixth award was made to the Curtis-Quillen Company, Providence, R. I., for substructure work to cost about $30,000 in connection with the reconstruction of a bridge over Clinton street, Fall River, Mass.

NORFOLK & WESTERN.—The city of Columbus, Ohio, has approved the plans of this railroad for the elimination of grade crossings in the eastern part of that city. Work on the project is expected to be undertaken immediately. The total cost is estimated at $4,000,000.

VIRGINIAN AND NORFOLK & WESTERN.—The Interstate Commerce Commission has postponed until October 22 the effective date of its certificates and orders recently issued authorizing the Virginian & Western, a subsidiary of the Virginian, and the Guyandot & Tug River, a subsidiary of the Norfolk & Western, to build extensions in the Guyandot Valley of West Virginia. The Chesapeake & Ohio, whose application for authority to build through the valley was denied, has asked for a reconsideration of the decision.

WABASH.—A contract for the remodeling of Inbound Freight House No. 2, at St. Louis, Mo., has been awarded to the MacDonald Construction Company, St. Louis, at a cost of about $75,000.

Financial

BALTIMORE & EASTERN.—*Acquisition.*—This company has applied to the Interstate Commerce Commission for authority to acquire by purchase the line of the Baltimore, Chesapeake & Atlantic and to issue $650,000 additional capital stock to finance the project.

BALTIMORE & OHIO.—*Annual Report.*—The annual report for 1927 shows net income after interest and other charges of $22,632,345 equivalent after allowance for the 4 per cent dividends on the preferred stock to $9.42 per share on the outstanding common stock. Net income in 1926 was $27,609,759, or equivalent to $16.62 per share. Selected items from the income statement follow:

	1927	1926
Average mileage operated	5,552.48	5,551.70
RAILWAY OPERATING REVENUES	$246,078,510	$257,573,386
Maintenance of way	30,894,282	32,639,547
Maintenance of equipment	51,318,647	55,039,906
Transportation	87,289,456	89,545,841
TOTAL OPERATING EXPENSES	186,168,521	191,472,301
Operating ratio	75.65	74.34
NET REVENUE FROM OPERATIONS	59,909,989	66,101,085
Railway tax accruals	12,286,617	12,076,677
Equipment rents, Net Dr.	1,738,556	2,368,891
Joint facility rents, Net Dr.	1,019,602	1,257,456
NET RAILWAY OPERATING INCOME	44,817,227	50,163,850
Non-operating income	8,570,687	7,116,338
GROSS INCOME	53,387,914	57,280,188
Rent for leased roads	595,832	595,104
Interest on funded debt	27,963,957	27,660,105
TOTAL DEDUCTIONS FROM GROSS INCOME	30,755,569	29,670,429
NET INCOME	22,632,345	27,609,759

BONLEE & WESTERN.—*Abandonment.*—The Interstate Commerce Commission has authorized this company to abandon its line between Bonlee, N. C., and Bennett, 10.4 miles.

CHICAGO, SPRINGFIELD & ST. LOUIS.—*Notes.*—The Interstate Commerce Commission has authorized this company to issue unsecured promissory notes to the amount of $52,500.

FLORIDA EAST COAST.—*Construction Authorized.*—The Interstate Commerce Commission has authorized this company to construct a line from Belleglade-Chosen, Fla., to a point near Lake Harbor on the west bank of the Miami canal, 9.5 miles.

MANUFACTURERS.—*Operation over St. Louis Municipal Bridge Recommended.*—Examiner O. D. Weed has recommended, in a proposed report, that the Interstate Commerce Commission grant this company's application for authority to operate over the St. Louis municipal bridge between St. Louis and East St. Louis. The application was opposed by the Terminal Railroad Association of St. Louis.

MINNEAPOLIS & ST. LOUIS.—*Court approves claims.*—The findings of Howard S. Abbott, master in chancery, in which he disallowed the government's contention of priority in claims against the road totaling $3,713,297 were affirmed by Judge Wilbur F. Booth of the Circuit Court of Appeals at Minneapolis, Minn., on September 6. In his findings, Mr. Abbott dismissed the government's claims, totaling $799,390, allowed one for $100, and held that in the other cases the government, as a claimant, was on the same basis as private claimants. Most of the claims against the railroad grew out of the government operation of the road during the World War.

PITTSBURGH & WEST VIRGINIA.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to nominally issue $7,000,000 and actually issue $3,000,000 of a proposed issue of $10,000,000 of first mortgage 5 per cent gold bonds. The company proposes to sell $3,000,000 at not less than 95 to finance the first unit of its extension to Connellsville, Pa.

SEABOARD AIR LINE.—*Bonds.*—The Interstate Commerce Commission has authorized this company to issue $480,000 of first and consolidated mortgage gold bonds, series A, to be pledged and repledged as collateral security for short term notes.

SEABOARD AIR LINE.—*Control of Two Subsidiaries.*—The Interstate Commerce Commission has authorized the Seaboard to modify its lease of the Brooksville & Inverness to provide for payment of rental only in case of default under the mortgage, payment of rental not to accrue on securities not held by the Seaboard and not pledged under the mortgage. Other minor changes are also made. The Seaboard is making uniform its leases of subsidiaries and the changes here authorized conform with those already permitted for the Charlotte Harbor & Northern. A similar change has been made in the lease of the Naples, Seaboard & Gulf.

ST. JOHN & OPHIR.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for a certificate authorizing the abandonment of the operation of its line between Ophir and St. John, Utah, because of the closing of the mine from which it derived its principal traffic.

ST. LOUIS-SAN FRANCISCO.—*Abandonment of Operation.*—The Interstate Commerce Commission has authorized this company to abandon operation of that portion of the Kansas City, Clinton & Springfield, a subsidiary, between Stanley, Kans., and Belton, Mo., 9 miles.

WESTERN OF ALABAMA.—*Loan.*—This company has applied to the Interstate Commerce Commission for authority to make a short-term loan of $1,543,000 for the purpose of retiring bonds maturing on October 1. It proposes to pledge as collateral for the loan a like amount of first mortgage bonds, which it had been authorized by the commission to issue and

sell for the purpose of paying the maturing issue, but it stated that it had found it impossible to sell them at a fair price.

Dividends Declared

Belgian National Railways.—Participating preferred, American shares, $4.14. (The previous dividend was $1.86, paid June 15).

International-Great Northern.—3 per cent interest on outstanding 6 per cent adjustment mortgage bonds for the six months ended June 30.

Lehigh Valley.—Common, $.87½, quarterly, preferred, $1.25, quarterly, both payable October 1 to holders of record September 15.

St. Louis, Rocky Mountain & Pacific.—Common, ½ per cent, quarterly; preferred, 1¼ per cent, quarterly; both payable September 29 to holders of record September 15.

St. Louis Southwestern.—Preferred, $1.75, quarterly, payable October 1 to holders of record September 15.

Average Prices of Stocks and of Bonds

	Sept. 11	Last week	Last year
Average price of 20 representative railway stocks.	122.75	124.84	120.56
Average price of 20 representative railway bonds..	93.42	93.62	95.29

Valuation Reports

The Interstate Commerce Commission has issued final valuation reports finding the final value for rate-making purposes of the property owned and used for common-carrier purposes, as of the respective valuation dates, as follows:

Mobile & Ohio.....	$43,829,997	1915
Skaneateles	215,800	1918

Railway Officers

Executive

J. W. Roberts, assistant vice-president of the Pennsylvania, with headquarters at the Pennsylvania's Produce Terminal in New York, has also been appointed assistant vice-president of the Long Island, with the same headquarters. A photograph and sketch of Mr. Robert's railway career appeared in the *Railway Age* of July 28, page 176.

Robert C. Hicks, traffic manager of the Georgia & Florida, has been appointed assistant to the president. Mr. Hicks was born at Stanford, Ky., on July 5, 1862, and entered railway service in 1879 at Somerset, Ky., as baggagemaster on the Cincinnati Southern, in which capacity he served on the first passenger train to be run over this road between Cincinnati and Chattanooga.

Robert C. Hicks

In 1881 he entered the service of the East Tennessee, Virginia & Georgia (now a part of the Southern) as a conductor during the period of construction of this road. In the following year, he was injured and left train service, becoming a clerk in the office of the general agent of the Queen & Crescent at Chattanooga. Later he was promoted to chief clerk and subsequently became general northwestern agent of the Chattanooga, Rome & Columbus (now a part of the Central of Georgia), with headquarters at Cincinnati. In 1892 he was appointed general western agent at St. Louis for the Central of Georgia. Later he served as general agent of the Seaboard Air Line at Chicago, being transferred in a similar capacity to Birmingham, Ala., when this road was being built into that city. In 1904 he went with the Atlantic Refining Company at Philadelphia, Pa., as superintendent of transportation and, in the following year, was appointed assistant division freight agent of the Southern at Columbia, S. C. He was loaned by the Southern to the Jamestown Exposition in 1907 to take charge of traffic and transportation, later returning to the Southern at Baltimore, Md., as commercial agent for the Asheville Fast Freight Line. In 1911 he entered the service of the Western Maryland on special assignment and, in 1914, assumed charge of traffic arrangements in the United States for the Hoover Commission for Belgian Relief. In 1916 he became director of traffic for the French government's war supplies purchased in the United States and two years later became traffic assistant to the manager of inland traffic of the United States Navy. From 1919 to 1921 he was traffic manager of the Maryland Forwarding Company and the Davidson Chemical Company at Baltimore and New York and, in the latter year, became traffic manager of the Georgia & Florida, with headquarters at Augusta, Ga., in which position he remained until the time of his present appointment.

Financial, Legal and Accounting

Cope J. Hanley has been appointed general attorney of the Chicago, Indianapolis & Louisville, with headquarters at Chicago. Previous to this appointment Mr. Hanley was a member of the law firm of Hanley & Hanley, local attorneys for the Monon at Rensselaer, Ind.

Albert R. Barton, assistant auditor of the Belt Railway of Chicago and assistant auditor and assistant secretary of the Chicago & Western Indiana, with headquarters at Chicago, has been elected auditor of the two companies, with headquarters at the same point. Mr. Barton has been connected with these two companies for nearly 37 years. He was born at Chicago on November 10, 1875, and after attending public schools in that city from 1881 to

Albert R. Barton

1888 he attended evening high school until 1891. In that year he entered railway service as an office boy on the Belt Railway and the C. & W. I., then advancing successively through various clerical positions, including that of chief clerk, until 1912 when he was promoted to assistant auditor. During federal control of the railroads from 1918 to March, 1920, Mr. Barton served as treasurer and assistant secretary of the two companies. On the latter date he was appointed assistant auditor of both railroads and assistant secretary of the C. & W. I. His promotion to auditor became effective on September 4.

Operating

A. T. Richardson has been appointed general manager of the Gulf & Sabine River, with headquarters at Fullerton, La.

M. K. Pace, general yardmaster of the St. Louis-San Francisco at Monett, Mo., has been promoted to terminal trainmaster at Memphis, Tenn., a newly created position.

E. C. Gegenheimer, assistant trainmaster on the Toledo division of the Pennsylvania, has been appointed trainmaster, office of the chief engineer, Philadelphia Improvements.

C. P. Cross has been appointed trainmaster on the Lehigh & New England, with headquarters at Campbell Hall, N. Y. The position of assistant trainmaster at Campbell Hall has been abolished.

P. Lopez, assistant to the superintendent of car service of the National of Mexico, has been appointed acting superintendent of car service, with headquarters at Mexico City, Mex., succeeding **C. Salazar,** deceased.

J. B. Smith, assistant of transportation of the Great Northern, with headquarters at St. Paul, Minn., has been promoted to superintendent of transportation, with headquarters at the same point, succeeding A. L. Bergfeld, resigned.

H. J. Micksch, following his return from a leave of absence, has been appointed superintendent of the Beaumont division of the Southern Pacific Lines in Texas, with headquarters at Houston, Tex. He replaces **R. M. Hoover** who has been acting superintendent of the Beaumont division.

Traffic

P. E. Watson, division freight agent of the Missouri Pacific at Pueblo, Colo., has been promoted to assistant general freight and passenger agent, with headquarters at the same point.

J. P. Mader, general freight and passenger agent on the Algoma Eastern, with headquarters at Sudbury, Ont., has been appointed to the same position on the Algoma Central & Hudson Bay, with headquarters at Sault Ste. Marie, Ont., succeeding **H. J. Herrold,** resigned.

Fred C. Salter, manager of the foreign department of the Canadian National Express, with headquarters at Montreal, Que., and **John H. Moore,** superintendent of equipment and supplies, with the same headquarters, have retired from active service, effective August 31.

R. M. McBain, freight traffic representative of the Canadian National at Brandon, Man., has been promoted to general agent of the freight department at the same point. **R. M. Stubbs,** commercial agent at St. Paul, Minn., has been promoted to general agent of the freight department at that point. **R. Logan,** commercial agent at Tulsa, Okla., has been promoted to general agent in the freight department at Tulsa. **L. C. Lynds,** city ticket agent at St. Johns, N. B., has been promoted to general agent of the passenger department at the same point.

Noel B. Wright, who has been appointed freight traffic manager on the Central of Georgia, with headquarters at Savannah, Ga., was born on February 27, 1876, at Greensboro, Green County, Ga. He was educated in the Green County schools and business college at Atlanta, Ga., and entered railway service on August 24, 1896, as stenographer to the traveling freight agent on the Memphis & Charleston (now part of the Southern). The following year he became stenographer to the general agent on the Norfolk & Western at Atlanta, remaining in that position until October, 1898, when he became traveling freight agent on the same road. From December 1, 1905, to February 1, 1908, he served as chief clerk to the general freight agent on the Central of Georgia at Savannah, and on the latter date he was promoted to the position of assistant general freight agent. In January, 1911, he was appointed general freight agent for the same road and five years later he was promoted to assistant freight traffic manager, in which capacity he served up until the time of his recent appointment as freight traffic manager.

Noel B. Wright

Jorge Alarcon, who has been promoted to general freight and passenger agent of the Southern Pacific of Mexico, with headquarters at Guadalajara, Jal., has been connected with the traffic department of that company for nearly 16 years. He was born on April 26, 1895, at Ciudad Jaurez, Chih., and after attending public and private primary schools in that city he attended a business college at El Paso, Tex., during 1909. For a year following this time he acted as a stenographer and city salesman for a commercial concern at El Paso and in December, 1912, he entered the service of the Southern Pacific of Mexico as a stenographer. Mr. Alarcon was advanced to English-Spanish stenographer in May, 1915, and in August, 1918, he became a passenger clerk. In the same year he was advanced to chief passenger clerk and four years later he was again promoted to chief clerk in the traffic department. Mr. Alarcon was promoted to assistant general freight agent, with headquarters at Guadalajara, on February 1, 1927, and his further promotion to general freight and passenger agent became effective on August 1, 1928.

Jorge Alarcon

Engineering, Maintenance of Way and Signaling

J. M. Sills, division engineer of the Eastern division of the St. Louis-San Francisco, with headquarters at Springfield, Mo., has resigned to become connected with the brokerage firm of John Muir & Co., New York.

H. B. Stuart, valuation engineer on the Canadian National, with headquarters at Toronto, Ont., has been appointed chief of valuation, with the same headquarters. **W. S. MacCulloch** has been appointed assistant chief of valuation, with headquarters at Toronto, Ont. The position of valuation engineer has been abolished.

Obituary

John S. Campbell, assistant trainmaster of the Grand Rapids division of the Pennsylvania, with headquarters at Cadillac, Mich., died in that city on August 16, following an operation.

George T. Huey, general agent of the Minneapolis, St. Paul & Sault Ste. Marie at Minneapolis, Minn., was killed near St. Paul, Minn., on August 30 when the automobile in which he was riding was struck at a grade crossing by a Soo Line passenger train.

Alexander Pope Humphrey, consulting counsel of the Southern and vice-president and general counsel of the Kentucky & Indiana Terminal, with headquarters at Louisville, Ky., died in that city on August 19 after a two year's illness. Mr. Humphrey was born at Louisville on January 26, 1848, and was graduated from Centre College in 1866 and from the law department of the University of Virginia in 1868. He was admitted to the bar in October of the latter year and began the practice of law in Louisville. In October, 1886, Mr. Humphrey entered railway service as general counsel of the Louisville, Evansville & St. Louis (now part of the Southern) and in 1894 he was appointed assistant general counsel of the Southern at Louisville, being promoted to general counsel of the Southern at that point in 1905. He was appointed general solicitor in 1918 and had been consulting counsel since 1924. Mr. Humphrey became vice-president and general counsel of the Kentucky & Indiana Terminal in 1900 and at the time of his death was president and general counsel of the Louisville & Jeffersonville Bridge & Railroad Company. He had been president of the American Bar Association for three successive years and was a member of the law firm of Humphrey, Crawford & Middleton.